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VOL. III.

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OR,

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SELECTED FROM THE AUTHOR'S HERBARIUM.

BY SIR WILLIAM JACKSON HOOKER, K.C.H. L L.D. F.R.A. & L.S. &c.

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THE

LONDON JOURNAL OF BOTANY;

CONTAINING

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OF

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NOVELTY, RARITY, HISTORY, OR USES;

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL MEMOIRS OF EMINENT BOTANISTS;

BY

SIR W. J. HOOKER, K.H., L.L.D., F.R.A., & L.S.

VICE-PRESIDENT OF THE LINNÆAN SOCIETY; HONORARY MEMBER OF THE ROYAL IRISH
ACADEMY; MEMBER OF THE IMPERIAL ACADEMY CÆSAR-LEOPOLD. NATURÆ CURIOSORUM
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EDITED BY

SIR W. J. HOOKER, K.H., L.L.D. F.R.S. & L.S.

JOURNAL OF A NATURALIST *in some little known parts of* NEW ZEALAND, *by* WILLIAM COLENSO, ESQ., *in a Letter to Sir W. J. Hooker.*

EVER since the publication of the celebrated Voyage of Captain Cook a lively interest has been felt in all that concerns the productions of New Zealand. Of late years that interest has been increased tenfold, in consequence of the rapid colonization of the islands by British Emigrants. Still, to the Naturalist, it has been very much a sealed country. Many of the plants collected during Sir J. Banks' and Mr. Menzies' visits are yet lying in our Herbaria unpublished; and the "*Floræ Insularum Novæ Zelandiæ Precursor,*"* of Mr. Allan Cunningham, edited by ourselves, partly in the "Companion to the Botanical Magazine," and partly in the "Annals of Natural History," enumerates only six hundred and forty species (including *Cryptogamiæ*), and these chiefly the products of the northern island and of the shores of that island. It has been remarked by Mr. A. Cunningham, "When we consider how little has been seen of the Botany of the northern island, notwithstanding that Europeans (engrossed truly in mercantile speculations) have now been settled several years upon its coasts; that the plants of the interior of its more expanded parts from the eastern to the western shores, which lie in the parallels of 38° and 39°, are absolutely wholly unknown, for no Botanist would deem it prudent to attempt a penetration, whatever his zeal may be, to its inland districts through which extirpating civil wars so extensively rage; when we glance at the map and perceive its snowy peaks, and especially that of Mount Egmont on the immediate western coast, the apex of which towers 14,000 feet above the ocean, whose waves wash its base, the upper part from the peak downwards to an extent of 5000 feet being clothed with eternal snows; in fine, when we reflect upon the fact, that (excepting at its northern shore in Cook's Strait and at Dusky Bay on its south western coast) the Botany of the larger or middle island is, to this day, veiled from our knowledge, we cannot but exclaim at the rich store of vegetable productions which yet remains to be laid before us! For the "*Precursor*" contains perhaps but a tithe of what may one day be shown us; but a foretaste to excite our desires to behold what the future labours of Botanists may, it is hoped ere long, lay open to our eyes. Long since has that learned Botanist, Mr. Brown, remarked that the character of the New Zealand Flora known to us chiefly from the materials collected by Sir Joseph Banks, is to a considerable degree peculiar, although it bears also a certain affinity to those of the two great countries between which it is situated, and approaching rather to that of Terra Australis than to South America."

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* Companion to the Botanical Magazine, vol. 2, p. 230.

Since the period at which the above was written many plants from New Zealand have been communicated to me by Mr. Colenso, Mr. Edgerley and Dr. Logan, constant residents in the northern island; and Mr. Bidwill, Dr. Sinclair, Dr. Dieffenbach and Dr. Hooker collected during their casual visits:—I cannot give a better idea of the value of their communications than by saying that whereas no species of Beech tree had ever been known to inhabit this group of islands, *four* distinct kinds have been brought to light by these researches, and are already published in our "*Icones Plan-*

tarum".* Valuable as are the discoveries of all those gentlemen whose names are now mentioned, there is one of them who deserves more particular mention, Mr. Colenso, and who, if his health and strength be spared, and leisure from his arduous duties as a devoted Missionary be granted, will contribute still more than he has yet done to the elucidation of the Botany and Natural History, generally, of New Zealand. His continued residence in the Islands, his entire familiarity with the language, his acquaintance with the character of the Aborigines, his influence as one of the most energetic of the Church Missionary Society,† his liberality and hospitality to visitors (as the officers of H. M. Discovery Ships, Erebus and Terror, can testify) and his frequent journies, all give him advantages which no other traveller there has enjoyed; and admirably does he take advantage of the facilities he thus possesses. The pages of this Journal and more especially those of our "*Icones Plantarum*" bear witness to many of the discoveries made by Mr. Colenso. We have lately received a valuable Monograph of several new Ferns of New Zealand from the same pen, published in the Tasmanian Philosophical Journal, an admirable Memoir on the Fossil Bones of a bird allied to the Ostrich which, together with the specimens of the bones themselves, I have placed in the hands of Professor Owen;—and now I have lately had the pleasure to receive the following letter, giving a most interesting account of a three months' tour across the widest part of the northern Island, which was productive of still more botanical novelties, and which I am sure will be hailed with pleasure by every reader of this Journal. Great though the tide of emigration to New Zealand has been, the hills and the vallies are still clothed with their aboriginal vegetation: but ere the next generation shall have succeeded the present, its stately forests proved to be so valuable in yielding spars for the British navy will be levelled with the ground; and, as in St. Helena and other islands of limited extent, an exotic but naturalized vegetation will take their place; even the very animals now common will be extirpated. Already the majestic Cowdie, or New Zealand Pine is become scarce in many parts of the northern island, and that most remarkable bird, the *Apteryx australis,** is almost extinct.

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* See Tabs. DCXXX, DCXXXI, DCXXXIX, DCLII and DCLXXIII, of that work.

† As a specimen of the services rendered to the cause of Christianity, I may observe, that there are now lying before me, admirably bound copies of the New Zealand Testament and the Prayer Book, each of them bearing the inscription, "At a time when no mechanic was to be found here (New Zealand) this book was composed and finished, binding included, by the writer, W. Colenso, Superintendent of C.M.S. Printing department in New Zealand, 1842.

Very many of the plants alluded to in the following pages are here only mentioned by the numbers they bear in the collection sent to us by Mr. Colenso. Several of these have proved new: others require investigation and a comparison with specimens already existing in our own and other Herbarium, a work of much time, and I am unwilling to withhold the Journal from the public till such period as these plants could be named with accuracy. The circumstance is the less to be regretted, since the Botanist of the recent Antarctic Voyage, Dr. Hooker, is preparing a "*Flora of New Zealand,*" in which Mr. Colenso's plants of the present Journey will be referred to according to their numbers.

Paihia, Bay of Islands,
New Zealand, September 1, 1842.

My dear Sir William,

Having recently returned from a three months' tour among the natives in the little known districts of this island, and having been fortunate enough to obtain some Botanical specimens, among which it is hoped several new and interesting species will be found, I promise myself the pleasure of going over my collection and culling for you specimens therefrom; which will not, I trust, be considered altogether unworthy of a place in your valuable Herbarium.

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* See vol. 4, p. 312, of the Annals of Natural History, for an account of this bird, by Mr. Allan Cunningham.

I have, I confess, hitherto postponed doing so in hopes of receiving some Botanical works of reference from England. I will not, however, delay any longer, choosing rather to trust to your charity to cover my numerous and egregious errors, than by waiting a still further indefinite period, procrastinate the pleasure which you, as a Botanist and a true lover of the science, will, I well know, experience on the receipt of the plants.

As I may possibly have it in my power to make a few remarks, *en passant*, on the Natural History, Geology, Aspect, and Inhabitants of the districts which I traversed, I have decided upon throwing my observations into the form of a Journal; by which, too, you may the better be able to ascertain, in some degree at least, the Botanical Geography and relative situation of those parts.

On Friday, November 19, 1841, I embarked at the Bay of Islands, in the schooner Columbine for the East Cape, (lat. 37° 7″) and, on the evening of Monday the 22nd, landed at Warekahika (Hick's Bay), a small bay between Cape Runaway and the East Cape. The surf being very high on the beach, and the captain of the schooner wishing to proceed on his voyage (to Poverty Bay) with as little delay as possible, the wind too being fair, I was obliged to scramble on shore through the breakers as expeditiously as I could. In the course of the evening I was not a little chagrined to find, that the package containing the whole of my specimen paper, &c. &c., had, in the hurry of disembarking, been left behind on board of the vessel, which was now rapidly receding beyond the horizon! I had landed at this place five years before in my former visit to these parts. Although night was fast closing around me, (and I felt very much exhausted, having had three days of fasting through excess of sea-sickness), I noticed growing on the sand-hills near the shore, a small shrubby plant (1) with fleshy leaves and erect succulent stems; which, though not yet in flower, I supposed, from its 2-celled capsule, &c., to be a species of *Euphrasia*, probably *E. cuneata*, Forst.; that species having been found in similar situations a little further south, by Sir Jos. Banks, in 1769.

The next morning I proceeded on towards Te Kawakawa, a village on the sea-shore, about six miles distant. In my way thither I found, growing in sheltered spots among the sand-hills, a pretty little decumbent *compositaceous* species (2) which was quite new to me. Ascending a high hill, and gaining its summit, I observed a graceful-flowered plant growing secluded among the tangled brakes of *Pteris esculenta*; at first sight I hoped it might prove *Forstera sedifolia*; but, on procuring specimens, I found it to be a *Lobelia* (3), probably *L. littoralis*, R. Cunn. At Te Kawakawa I remained a day or two, much, however, too busily engaged with the natives to move out in quest of botanical specimens. From the cliffs in the immediate neighbourhood I gained several marine fossils; these are chiefly imbedded in indurated clay and conglomerate. During my stay at this place, one of the heaviest hail showers fell that I ever witnessed. The hail was large and rhomboidal, the one half (laterally) of each stone was composed of clear, and the other half of clouded, ice. The oldest natives speak of only remembering one such shower.

25th.—Leaving Te Kawakawa and travelling by the seaside, we passed several of the Taro plantations of these natives, (*Caladium esculentum*, Vent.). These plantations were in nice condition, and looked very neat, the plants being planted in Quincunx order and the ground strewed with white sand, to which the large pendulous dark green and shield-shaped leaves of the young plants formed a beautiful contrast: small screens, composed of the young branches of *Leptospermum scoparium*, intersected the grounds in every direction to shelter the young plants from the violence of the N. and E. winds. The visitor to this locality, travelling along the coast, is struck with the regular aud pleasing appearance of the Pohutukawa, (*Metrosideros tomentosa*, A. Cunn.), which here forms a living and ever-green rampart between the sea-beach and the main-land; its roots and trunks, in many places, laved by the flowing tide. On these flat rocks of indurated clay I observed a peculiar kind of *Alga* (3*a*), which, boiled, is commonly used as an article of food by the natives of these parts: they call it *Karengo.* It grows large and quite procumbent; and is often dried up and caused to adhere to the rocks which it inhabits, through the great heat of the sun, after the ebbing of the tide. On the sandy beach near the East Cape I found a species of *Triglochin*(4), (*T. flaccidum?*) much finer than any I had hitherto seen. I did not (as in my former visit) go round the Cape, (a bold and high promontory, composed of indurated clay, reclining back in solemn grandeur, on the face of which, from the continual descent of *débris* from its summit and sides, nothing grows,) as it was near high-water; but striking inland I found, on a little sandy plain, a *Veronica* (5), which to me was quite new, and may possibly be a new species. It grew low and rambling, not exceeding 2 feet in height. Unfortunately it was not in flower; but after some little search, I obtained some spikes of the capsules of last season. About this time it commenced raining heavily, so I was obliged to give over botanizing. Our prospect, at this period of our journey, was anything but pleasant. Descending the side of a hill through a small water-course, I obtained a remarkably fine individual of *Acianthus rivularis,* A. Cunn., and also several specimens of a little plant, *Myosotis,* sp. 7, (6) with orbiculate or sub-spathulate leaves, and racemed flowers; I subsequently got the ripe seed of this. At night I pitched my tent at Te Pito, a small village three miles south of the East Cape. The rain continuing to pour down made us glad enough to obtain shelter any where; although in our present position, on the side of a very steep hill quite open to the South Pacific which rolled its immeasurable billows to our feet, both shelter and food were anything but obtainable.

26th.—This morning the weather clearing I continued my journey. Ascending the precipitous hill near the bottom of which we last night bivouacked, we gained a wood, where I noticed a small tree of the *Melicytus* genus, with very long lanceolate leaves (7), apparently a new species; this plant has very much the appearance of *M. ramiflorus*, Forst., but differs from that species in the shape and length of its leaves, some of which measured 10 inches, and in its taller manner of growth, averaging from 12—18 feet in height. On the summit of the hill I gathered a specimen of the foliage of a very narrow-leaved *Veronica* (8), but could not find a plant any where in flower. The view from the rocky summit of this eminence was very imposing. I noticed a tall plant of the order *Compositæ* (31), probably a *Senecio*, which was new to me; it grew to the height of 3—4 feet among the young *Leptospermum*. Passing on, over the clayey hills, I gathered specimens of a fine *Monocotyledonous* plant (50), which I had not before observed; it flourished luxuriantly in this locality. Here, also, my new species of *Phormium* (*P. Forsterianum*) was very plentiful. At a short distance further on, I found a handsome *Pimelea* (32) in flower, a shrub of 2-3 feet in height, possibly *P. Gnidia*, Vahl. of this fine plant I took several specimens, although I hardly knew how to preserve them from want of paper. Descending the hill through a slatey defile to the coast, I was rewarded with an elegant little monopetalous-flowered plant (9), a new species of *Plantago* (11), and a species of *Mniarum* (40) : this last may prove to be *M. biflorum*, Forst.; these were all plentiful by the side of a little stream. I much wished to spend an hour at this place, but Rangitukia, the village where we intended halting for the night, and where we were to obtain a supply of food, was yet at a distance; the day, too, was rapidly passing away; so, with a sigh, which only Botanists know, I was obliged to proceed. The long stony beach was very tedious; we passed it, however, and turned again inland, up the valley of Waiapu. Our route now lay in the bed of the river at present dry, but in winter, judging from the appearance of the vegetation and stones about me, a mighty torrent. I noticed young trees of the *Edwardsia* genus very plentiful here, but whether a different species from the two present known ones, I could not determine. *A. Carmichaelia,* too, was very common, which appeared to me to differ considerably in habit from *C. australis,* in not being rigid like that plant, its branches being considerably more filiform and drooping; like the preceding, however, it was not in flower, and I could not ascertain whether it was a new species; notwithstanding, I took away a specimen for examination (7β).* I have subsequently received some seeds from a friend residing in this locality, which from his description appear to be those of this plant. A shrub of the order *Compositæ,* and which I believed to be identical with *Cassinia leptophylla,* was also abundant here; of this also I obtained specimens for investigation (34). Reaching Rangitukia, we were heartily welcomed by the natives, who are here very numerous. At this village I remained a few days, but had not leisure to move out to look after a single specimen. In fact, I had scarcely time to eat or rest.

29th.—This morning I left this hospitable village, and proceeded (as before) inland, up the dry bed of the river; the sun hot and insects very numerous, of which I gained several interesting, and doubtless, new species. I discovered on the banks of the river a new and peculiar species of *Rubus*; a shrub almost leafless, with only here and there a small leaf or two very sparingly scattered at the extremities of its youngest branches. It was about five feet high; branches very long, filiform, and much entangled; in colour a beautiful light green, thickly studded with orange-coloured prickles (51). The natives, who were with me, assured me that it bore red fruit in the winter season which the birds fed on. I much regretted that I could not detect any vestige of its flowers or fruit. Here I also found, (out of flower), two small *cæspitose* growing plants of the order *Compositæ*; of one of which,

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[*] See Packet 7β.

(29) called by the natives, Papapa, I found old flowers; of the other (30) I was not so fortunate. I also observed a small-leaved *Epilobium* (27), and another, a very beautiful species, (10*a*) without however either flowers or fruit. I subsequently found this last-mentioned species growing in rich profusion on the banks of the river Wirinaki far away in the interior, (vide sp. no. 188). Passing through the woods on the banks of the river, I observed some young trees with compound leaves (14), which were new to me; I could not then detect their parents, but I think I was fortunate enough to find them afterwards on the mountains in the interior, (vide, sp. No. 131). We soon arrived at Wakawitiva, one of the largest native towns in New Zealand, where we remained a day or two.

Dec. 1st.—Early this morning we left Wakawitiva, the principal village of the Ngatiporou tribe.—I had proceeded but a few yards ere I discovered a very pretty procumbent *Ranunculus*, a new species (15) which grew here among the grass. At some distance further was a very fine grass (52) which flourished here, and another with black joints (53). In a grassy plain, a little beyond the river grew a curious little *Lobelia* (28), which I have reason to believe identical with one formerly discovered by me on the sea-shore of the East coast, and sent to you in 1841. Here also that pretty little plant, *Micromaria Cunninghamii*, Benth., was very plentiful (10). Proceeding hence towards the sea, through a long, irregular, and stony water-course, (which road I chose in hopes of meeting with something new), I found several mosses, (vide packet, No. 298). Emerging from the forest's gloom we descended to the beach, over which we continued our course for a few miles, until we arrived at a small village called Wareponga. Here I saw a species of *Clematis* which appeared new; leaves were ternate, very coriaceous and glabrous, with the lower half only of each leaf greatly crenate. I fear that I must somehow have mislaid my specimens of this plant as I cannot find them; the fruit, however, I fortunately possess (54). On the rocks, in this locality, I noticed a species of *Patella* which sank the base of its shell considerably into the face of the rock on which it had fixed its residence; these rocks, as before, were composed of indurated clay.

2nd.—It rained incessantly during the night; the morning however was fine, and I continued my journey. Our route, at first, lay along the beaches; but after travelling about four miles we arrived at Waipiro, a small village, where we breakfasted, and directed our course inland over high and craggy hills. At a little distance beyond Tapatahi, (a romantically situated village perched high on a precipitous crag), I found a new species of *Fagus*, ? with small oval leaves (36); a timber-tree from 30—60 feet in height. I had observed the tree in this very spot when passing here a few years ago; and had been looking out for it for several days; I did not, however, see a single plant of the genus until I came to the identical place where I had before noticed it. I had some difficulty in getting the natives to climb the trees to get me specimens, which, however, I procured, but not such as I wished. A little further on, by the side of a water-course, in a glen, I obtained two *Epilobiums,* one with large, thin, serrated, subrotund leaves (20), and the other, a smaller plant with oval leaves slightly serrate (20β). Proceeding onwards, I found a graceful *Convolvulus* with small leaves (37), which I believed to be the same as one, the foliage of which I sent four years ago to my late botanical friend Allan Cunningham, Esq. In descending to the sea, I observed a *Pittosporum* which I supposed to be *P. umbellatum*; still it looked so very fine that I could not refrain from taking a specimen (41); which since my return I have ascertained to be a distinct species; its place will, I think, be found between *P. crassifolium* and *P. umbellatum.* I noticed here, while resting on the turf, the great prevalence of smut (*Uredo*, sp.) on the common indigenous grasses; and also the extreme profusion of *Edwardsia microphylla* which every where abounded. At the north parts of the island this tree is by no means common, nor do I recollect ever having seen a single plant in any other locality than *close* by the sides of rivers, and on headlands *near* the sea. A large species of *Ranunculus* (19) also grew in this spot. Towards evening I brought up in heavy rain at Te Ariuru, a large village in Tokomaru Bay; a spot which by the Naturalist will ever be contemplated with the most pleasant association of feeling, for here it was that Sir Joseph Banks and Dr. Solander first botanized in October, 1769. This bay was called Tegadoo by Cook. At this village I was obliged to remain a day or two, in consequence of the very violent gale of wind and rain which commenced on the night of my arrival, and completely imprisoned me within the canvass walls of my tent. On the ebbing, however, of the tide, I ventured to the rocks just below, and was rewarded with an elegant species of *Patella,* which being quite new to me and believing it to be undescribed, I have named *P. Solandri:* sending you, my dear Sir William, a specimen and enclosing a description.

4th.—Early this morning I recommenced my journey. Our route being by the sea-side, the sea in many places laving the bases of the clayey cliffs, together with the extreme wetness and slipperiness of almost every thing from the late heavy rains made our walk very unpleasant. At Motukaroro, the S.E. headland of Tokomaru Bay, the huge bones of a large whale lay bleaching on the strand. Proceeding hence, about 3 P.M., we passed Waihirare, a beautiful waterfall which fell down a perpendicular sandstone cliff; the face of which, covered with Mosses and Ferns, appeared more than ordinarily lovely in this desolate and otherwise barren spot. I took a hasty glance at the vegetation in hopes of somewhat new, but could not discover any thing. Here on the rocks I gained another species of *Patella*, which differed much from those I had hitherto seen. At 5, P.M., we reached Anaura, a small village where we were very glad indeed to halt for our march this day had been most fatiguing. I observed, in the houses of the natives at this place, a quantity of a thick succulent species of *Fucus* hung up to dry which they informed me was used as an article of food, mixing it with the expressed juice of the fruit of *Coriaria sarmentosa* to give it consistency: this *Fucus* they call Rimurapa.

6th.—Leaving Anaura and striking inland (in order to visit some natives residing on the banks of the River Uawa), we ascended some steep hills, on the summits of which I noticed several fine plants of *Trophis*, (*T. opaca ? Sol.?*) none, however, possessing either flowers or fruit. In a swamp near by I obtained an *Epilobium* (21), which was new to me; and in a wood a little further on I gathered specimens of several shrubs, or young trees (35), but unfortunately could not obtain any either in flower or fruit. Here a very graceful species of *Metrosideros*, with ovate-acuminate leaves (22), hung pendent from the trees; and another species in flower (13), perhaps one of those described by Cunningham. In the shady recesses of this wood I discovered a handsome species of *Polypodium* [*P. sylvaticum, n. sp.*, W. C.] (55), together with an elegant *Davallia* [*D. Novæ Zelandiæ, n. sp.*, W. C.] (56), the only *Davallia* hitherto found in these islands. *Polypodium tenellum* (57), here adhering to the trees, apparently varied, in the shortness of its pinnæ, &c., from the specimens I had noticed in the north parts of the island. An *Epilobium* (23), with very pubescent leaves and peduncles, which grew hereabouts in grassy places, I also secured. This plant as well as the former (No. 21) grew high from 12 — 30 inches. Arriving at the banks of the Uawa, at present a muddy rapid stream, swollen greatly through the late rains, I noticed a *Lobelia* (58) growing plentifully, probably *L. angulata*, Forst. After some little time spent in fording the stream (on the opposite bank of which *Erpetion spathulatum*, Don, was plentiful, but not in flower), we continued our journey until we arrived at Mangatuna, a small village, where, at the very pressing invitation of the chief we consented to remain for the night. In a wood close by I found an *Orchis* (16), the leaf of which I had often seen at the northward; but though I had frequently sought its flower, I had never been fortunate enough to obtain it. The flowering season of this, too, unfortunately was long past; I brought away, however, the capsule for examination. The next morning we left this little village and, recrossing the Uawa, proceeded over the alluvial plains which form its banks towards the sea. In this morning journey I obtained two species of *Epilobium*; one (12) with large ovate leaves, adpressed on the stalk; the other (12 *a*) with long lanceolate leaves. I also got specimens of a pretty little decumbent plant (42) in flower and fruit. At 2 P.M., we reached Hinuroro, a large village on the seashore at the mouth of the Uawa River. This bay, or rather open roadstead, is the Tolaga Bay (in 38° S.) of our illustrious circumnavigator, Cook. Here his ships were at anchor in October, 1769; here, too, it was that "the first *Knightia excelsa*, Br., was seen, and the first *Areca sapida*, Sol., was cut down for the sake of its top." And here, near the S.E. headland of the bay, Cook dug a well for the supplying of his ships with water; which well is shewn at this day by the natives to the curious "white man" travelling this way.

9th.—We recommenced our journey this morning, crossing the Uawa, at its mouth, in a canoe. Our route, at first, lay inland, thence we turned towards the sea. Descending a high hill near the coast, I was both gratified and rewarded in finding an elegant little *Arthropodium* in flower, quite a new species (18); I only observed the plant in this locality, although I sought it assiduously during the remainder of my journey as I wished more specimens. Close by it grew a very handsome shrubby *Pimelea* (24), which, to me, appeared to be a new species, and distinct from the one numbered 32. Proceeding on, over the long sandy beaches, we were soon overtaken with rain, from which we endeavoured to shelter ourselves under some fine trees of *Corynocarpus lævigata*, Forst., which often grow in clumps near the seashore; but the rain continuing, we were obliged to proceed. From some natives whom we met, I obtained a basket of *Haliotis*, the black fish of which my baggage-bearers ate raw, with great zest. On the shells I found a peculiar little

Patella, identical with a species discovered by Dr. Jos. Hooker, at Auckland Island. At four P.M., we arrived at Parinuiotera, the high bluff promontory, commonly known from its appearance at sea, by the not inappropriate though quite unclassical appellation of "Gable-End Foreland." This remarkable headland, not less than 200 feet in perpendicular height, is entirely composed of white indurated clay, on whose face and sides grew not so much as a single moss or lichen, from the continual crumbling down of the clay of which it is composed. Here, in the pelting rain, beneath this towering crag where we could scarcely stand on our feet, owing to the extreme slipperiness of the clayey rocks, we found that the tide had not sufficiently receded to allow of our passing onwards without hazard. As, however, the evening was drawing on, and we had still some distance to travel ere we should meet with either food or shelter, we were necessitated to make the attempt. Scrambling, in some places, on all-fours, like a cat, and upborne by my faithful natives, I rounded this cape, through the breakers, passing under a natural archway in the rocky cliff, a thing of common occurrence, in similar situations, in New Zealand, and reached in safety, though wet, and cold, and hungry, the other side. Continuing my march, I picked up several specimens of *Algæ* which were new to me (59). At six P.M., we arrived at Pakarae, a small village, containing about twelve persons, who, according to their custom, heartily welcomed us although they had not a scrap of food to give us. The old chief kindly pulled up three stakes from the fence of his little city as tent-poles for my tent, for trees there were none in this neighbourhood, and presented me with a dead craw-fish which I was happy enough to obtain, and divide among six of my party, including myself, as a substitute for supper. Next morning we started early, (having procured a basket of sweet potatoes for our breakfast, which were fetched during the night from some distance) travelling, as yesterday, by the sea-side. At two P.M., we halted to roast a few potatoes for our dinner which afforded me an opportunity of straying about a little, after specimens. In doing so I was fortunate enough to obtain *Euphrasia cuneata* in flower, which was abundant here on the clayey cliffs, and three species of *Compositæ*, two of them quite new to me. I had previously noticed the leaves of one, a curious little plant, in the slatey defile, near Waiapu, where I obtained the small *Plantago* (11), and other plants; the leaves and stalk of this plant (39) were covered with a viscid substance which exuded from its glandular pores. Another (25) grew commonly about the bases and faces of the low clayey and sandy cliffs, and often attained the height of 4 or 5 feet. The third (46), a *Composita*, was found in similar situations and of the same height as the preceding. The peculiar glaucous leaves of this last, so much resembling those found on the flowering stems of many varieties of *Brassica oleracea* greatly attracted my notice. Here, also, procumbent upon the sand, grew a small plant (44), somewhat resembling in habit and general appearance *Tetragonia expansa*, but differing in the fruit, the berries being large, succulent, pimpled, and dewy, and filled with a carmine-coloured juice; this juice is used by the natives in writing as a substitute for ink; but like most other simple vegetable dyes is very evanescent; the natives call it *Kokihi*. Here, too, I noticed a *Chenopodium* (38), which, I think, I must have sent you before. A *Linum* (17) which appeared to differ somewhat from *L. monogynum*, at least in size, I also discovered in this locality; with a small, straggling, procumbent plant (48), which at first I supposed to be *Anchusa spathulata*, Rœm.; but Cunningham, I find, describes that species as possessing "*folia ovata obtusa,*" which this one has not; to that family, however, it belongs in common with its ally the plant numbered 6, already mentioned. Having hastily gleaned this neighbourhood, we once more struck inland. The little decumbent plant (2), first seen at Warekahika was common here on the sand-hills near the shore. Leaving the sand-hills and proceeding on through a long swamp of *Phormium*, about five P.M., we reached the river at Turanganui in the inner N.W. angle of Poverty Bay, and crossing the river in a canoe made the best of our way for Kaupapa, a mission station, where the Rev. W. Williams resides; this place we reached by seven P.M., quite tired. The hospitable reception, however, which we received from Mr. Williams went far towards causing us to forget the toils of the journey. As the vessel in which I came to Warekahika had been to this place, one of my first inquiries was after my package of paper, and I was happy to find it safe in Mr. W's keeping.

At Mr. W's I remained for several days, occasionally, when weather and duty permitted itinerating in the neighbourhood in quest of specimens. In the alluvial plains on the banks of the river, grew a plant of the Order *Compositæ* (47), possessing a very elegant coloured imbricated involucre. In the swamps, among *Typha*, I detected a curious little floating plant (33),* which covered the whole surface of the standing water. Here, also, on the banks I procured fine specimens of a spiny shrub, of the order *Rhameæ* (49). I had noticed it when here in 1838, and got living plants, which unfortunately died in my garden at Paihia. Until this time, however, I had neither seen its fruit nor flower; it appears to possess characters indicative of its belonging to the genus *Colletia, Brongn.*; perhaps a new species of *Discaria?*† It forms strong dense bushes, 2 to 4 feet in height, and would, doubtless, make an excellent fence; for which purpose I gathered a quantity of its seed, now nearly ripe. The natives give this plant the expressive name of Tumatakuru, *i. e.* literally, Standingface-beater. I also noticed a small linear-leaved *Senecio* (26), common here among the grass which appeared to me to be distinct from any species yet observed. On a hill in the neighbourhood, I procured fine specimens of a species of *Cheilanthes* (60), perhaps *C. tenuifolia*, R. Br., and in a damp wood, at a little distance, a fine and lovely *Moss* (45), which was quite new to me. I felt greatly disappointed, however, in not being so fortunate as to find a single specimen in fruit. In this locality, too, a small *Galium* (43) occurred, which may possibly prove different from the two species noticed by Cunningham. I again observed in this neighbourhood that elegant *Rubus* already mentioned (51), but much in the same state as those previously seen at Waiapu; and I was rather surprised to find the Ngaio (*Myoporum lætum,* Forst.) growing here very commonly as a forest-tree, with a straightness and height unknown in the north part of the island. In the Bay of Islands and adjacent districts, *M. lætum* is an irregular growing shrub, or small tree, only found in the immediate neighbourhood of the sea; there, its wood is so small as not to be of any use, and is not even collected for the purpose of firing; while here, the tree attains the height of 30—35 feet, and is very commonly used by the natives for posts, poles, rafters, &c. I quite satisfied myself, however, of its perfect identity with the northern one.

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* Lemna. [ED.]

† Decidedly so. [ED.]

Dec. 20.—This morning I re-commenced my journey, directing my course for the first time directly into the interior. For some time we proceeded up the valley by the banks of the river over alluvial and grassy plains; and about two P.M., reached the forests at the base of the first high range of hills. Here, growing on the river's bank, was a species of *Compositæ* (84) differing from any I had yet noticed. A species of *Viola* (82) occurred plentifully; but I could not obtain a specimen in flower. In a damp wood I discovered an elegant membranaceous-leaved *Lomaria* (265), [*L. rotundifolia, n. sp.,* W. C.,] with fine specimens of another species of the same genus (266) which appeared a variety of the plant formerly sent by me to you, and figured in *Icones Plantarum Tab.* CDXXIX (*L. lanceolata.*) In pools in marshy ground, almost entirely submersed in water, I found a fine aquatic *Ranunculus* (99) with very long petioles. On the clayey hills and generally in dry elevated spots, I obtained specimens of what may probably be species of *Celmisia* (86). I think these will prove two distinct species, and different kinds of *Anchusa,* or *Myosotis* (81, 91) I also obtained in this locality. Ascending a hill I discovered a plant with copious verticillate inflorescence, and large subrotund leaves, with long succulent petioles (83). Most unfortunately I could not find a specimen possessing either seeds or flowers, although I sought most assiduously for such. It must have flowered very early in the season, as both carpels and peduncles in every specimen were quite withered; some flower-stalks were from 12—20 inches in height.* On a barren hill in this neighbourhood grew a *Lycopodium* (85) which I had not before noticed; together with a few *mosses,* (89, 94, 96). From these heights the prospect is most extensive. Beneath me lay Poverty Bay with its romantic headlands; while far away to the left, Hikurangi (the isolated mountain near Waiapu) hid his venerable head in clouds. The atmosphere, however, was so filled with smoke arising from the fern which was burning furiously to windward, that it was only with difficulty that I discovered a single distant object. We travelled until near sunset, halting for the night by the side of a small stream in a desolate wild, called by the natives, Tapatapauma. Here several species of the genus *Epilobium* flourished luxuriantly, of which I secured specimens, (vide nos. 89, 93, 103, 104, 106, 107, and 109); nos. 105 and 110 may, in all probability, be merely varieties of 103. This last, 103, grew most plentifully in tufts every where on these hills among the fern. The sides of the rivulet were ornamented with fine plants of a *Fagus* (88), which I think will prove distinct from the large-leaved species discovered by me in the more northern parts of the Island; the leaves of *this* species being rhomboid-ovate, upper half of the leaf serrate or sub-laciniate, much truncate, tridentate, and attenuated at the base, serratures, 11—13, acuminate or mucronate, petioles and whole upper surface of the leaf tomentose; while the leaves of *that* species, (discovered by me at Wangarei, and sent to you in July, 1841), are ovato cordate, serrate nearly to the base, truncate, subtridentate, serratures 15—21, and petioles slightly villous; leaves much larger and broader.

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* Since penning the above I am happy in being enabled to add, that I have obtained fine living specimens of this plant, which have flowered since they came into my possession. Its corolla is monopetalous, labiate, and quinquefid with didynamous stamens, and superior unilocular ovary. It may probably rank in the Order *Cyrtandraceæ.* W.C. (This proves to be the rare *Ourisia macrophylla, Hook Ic. Pl.* tabs. DXLV, VI.—Ed.

21st. Rising early this morning I resumed my journey—and gaining the summit of the hill before me, I had an extensive view of the interior. Hill rose on hill,—Pelion on Ossa, in continuous succession far as the eye could reach. To the left was Wakapunake, an immense table-topped hill, or rather mountain; while far away in the distance to the right, a peculiarly precipitous mountain cast its bold outline in fine relief into the sky: this, my native guide informed me, was Waikare, to which we were going. Time, however, would not permit a lengthened gaze; so, descending the hill, we proceeded onwards. Here, among the short grass, a pretty little *Ophioglossum* (90) grew, which to me seemed to differ from those already noticed by Cunningham, and I first gathered also that very graceful fern, *Lomaria linearis, n. sp.,* W.C. (267), which grew rather abundantly in one spot in those grassy dells. On the dry and barren summit of a high hill, I procured a peculiar little *Compositæ* (97); and shortly after discovered a specimen of *Leptospermum* (95) for examination; which I believe, from its foliage and general appearance, to be a new species. It here grows as a stunted shrub; sometimes, however, reaching 7—10 feet in height. In this neighbourhood I noticed a new and very distinct species of *Coriaria* (100), an elegant procumbent plant with undulated ovate-acuminate leaves. It seldom rises above two feet in height and is mostly found quite prostrate, and very abundant; disputing the possession of the soil with those very common occupiers, *Pteris esculenta* and *Leptospermum scoparium.* Among the fern it has a very peculiar appearance; and, at first sight, might almost be taken for a gigantic foliaceous *Lichen* overspreading the surface of the ground. I have named this species *C. Kingiana*, (in honour of my much respected friend, Capt. P. P. King, R.N.), and was fortunate in procuring fine specimens in flower and fruit. At Hopekoko, a small stream (where we rested awhile to dine on roasted potatoes) the bed of which at the ford was one flat block of sandstone, I procured a specimen of a pretty little *Restiaceous* plant (264), and also of a *Hydrocotyle* (162). Having feasted with hearty zest on our roast, we proceeded on our journey. We soon arrived at a small cataract, down which the water fell perpendicularly about twenty feet into a deep and dark basin. The only ford at this place was on the very slippery edge of the fall, (composed of a single mass of rock), over which I was obliged to be carried, for I dared not trust my own footing on that perilous and uncertain path, which forcibly reminded me of the bridge to the Mahometan Elysium. As it was, I very nearly fell, through nervous excitement, into the gloomy depth below. At a short distance beyond this stream, and on its banks, I found another small *Lomaria* (268) [*L. deflexa, n. sp.*, W.C.], and, in the same locality, a graceful species of *Composita* (98), the leaves of which I had before observed. In a deep swamp through which we had to pass, I found a large-leaved *Epilobium* (102), and on a little hillock in the midst of the swamp, a small *Composita* (142), which may prove but a finer variety of 97 already noticed. Passing onwards I obtained a species of *Galium* (101) and a *Hydrocotyle* (92), which appeared to be new. I also noticed the leaf of an orchideous plant (111) differing from any I had hitherto seen; it was, however, past flowering, so I was obliged to be content with a leaf or two as a memento of such a plant. About six P.M., we arrived at the banks of the river Wangaroa, (one of the principal branches of the river Wairoa which disembogues into Hawke's Bay). Here I obtained two canoes from the natives, and paddled down the river about two and a half miles to Te Reinga, the principal village of the district. This river winds round the enormous hills of Wakapunake at the base of which the village is situated. I had often heard from time to time about this place from the natives, and the abyss-like cataract in its immediate vicinity, and had long cherished a hope of one day visiting it. Tired as I now was, I wished for morning that I might realize my desire, and gain a few more additions to the New Zealand Flora. The roar of the waters during the stillness of the night had much that was soothing as well as solemn in the sound. Morning broke, and, prayers and breakfast over, I entered into a little canoe and paddled about 200 yards to the bed of rock, which, crossing the river, dams up the water and causes the fall. This cataract, from its situation, is exceedingly romantic; the most so, I think, of any I have yet seen in New Zealand. The bed of rock, or rather deposit of indurated clay, sand and mud, of a very white colour, which here obstructs the progress of the river, (and through a narrow hollow in which the water rushes with fearful velocity) is filled with marine shells in a fossil state, although at a considerable distance from the sea and at a very great height above its level. This bed of white rock is large, being not less than 200 feet in width, and, when the river is swollen by the winter's rains, surrounded as it is by high and densely wooded hills, the fall must present a very imposing appearance. I gained several specimens of shells, Uni-Bi- and Multivalve by digging them out of the rock with my hatchet. Among them were specimens of the genera *Terebratula (Terebratula Tayloriana, n. sp.)*, *Voluta*, *Pecten*, *Lepas*, and others, at present unknown to me. The waters fell from rock to rock three several times, ere they were swallowed up in the dark eddying gulph below. The deep gloom of the river in the gorge beneath, the different hues of the dense masses of foliage on either side, the sunbeams peering downwards through the tops of the trees, the enormous bed of rock above, white as snow, with the natives who accompanied me perched here and there upon the same, and the little village in the back-ground, contributed to give the whole an enchanting effect. In the height only of the fall was I disappointed. I attempted a hurried sketch, but could not do the scene before me justice. In fact, I had too many things upon my hands at once, consequently I did nothing well. I wished, afterwards, when it was too late, that I had remained a day at this place, instead of pressing on, post-haste, in the manner I did. I just glanced at the vegetation here, and obtained two specimens of white-flowered *Gnaphalium*, (80, 130) which I had not before seen. Returning to the village, and obtaining, though with great difficulty, guides and baggage-bearers, we again commenced our journey. Paddling up another branch of the river, named Ruakituri, for nearly a mile, we landed on the left bank. The sun was intensely powerful, not a zephyr playing, nor a cloud in the air, nor a tree which could afford us a shade anywhere at hand. Through unfrequented paths, (if paths such could be termed) up and down steep hills overgrown with the young fern, (*Pt. escul.*) which at this season is peculiarly disagreeable from the clouds of fine yellow dust with which it is loaded, and which, inhaled at every breath causes you incessantly to sneeze, we travelled until three P.M. many times halting by the way. Having roasted a few potatoes, on which we dined, I endeavoured to cheer my companions in travel, but to little purpose. We however recommenced our journey, and continued our march, through want of water, until after sunset. Fortunately I succeeded in finding some, by the side of which, in the wilderness we encamped; all too fatigued to care much about anything save *rest*.

Oh! how often might I have exclaimed this day with the poet:—

"All-conquering heat, oh intermit thy wrath!
And on my throbbing temples potent thus
Beam not so fierce!————

————In vain I sigh,
And restless turn, and look around for night;
Night is far off, and *hotter* hours approach."

I gained nothing new in the whole of this melting day's horrid march; fern, fern, nothing but dry, dusty fern all around! I gathered, somewhere, in the course of the day a diseased branch of *Haxtonia furfuracea* (127) which was curiously distorted; probably caused by the punctures of insects. I have often noticed such deformities in various plants, but, as far as I recollect, I never saw it so regular or so large before. One river, the bed of which we descended into and crossed, ran at the depth of from 30 to 80 feet below the surface of the soil on either side.

23d.—At a very early hour we arose, and with stiff and unwilling limbs proceeded onwards. Want of food, in great measure, impelled us forward; as we had yesterday been led to suppose that we should reach the next village by night. After three long hours spent in active exertion, we reached 'Wataroa, a small village where we were heartily welcomed. Descending to this village, I gathered specimens of a *Melicope* (87), in fruit, a small but graceful tree, probably *M. simplex*, A. Cunn. Having breakfasted and rested awhile, we left this village, and continued our march, which, as yesterday, lay over high hills which rose in perpetual succession before us, appearing as if they were without valleys between. The country as we progressed into the interior became more and more barren; a scanty vegetation of stunted *Pteris esculenta, Leptospermum scoparium, Leucopogon Fraseri* and such plants alone existed on these dry and sterile spots; save where, in the deep glens between the hills, a clump of wood was to be found shewing their heads of foliage here and there like oases in the desert. The soil was dry and dusty, and principally composed of broken pumice. Towards evening, from the crest of one very high hill, we had, in looking back, a splendid though distant prospect of Hawke's Bay, and the rugged and high land bounding the same. On the top of this hill I obtained specimens of a small tree, a species *Weinmannia?* (131;) a few plants of which were here scattered about. My native guides assured me that no person could keep his footing on this elevated spot when the south wind blows; an assertion, which the denuded and bare aspect of the place, together with the very stunted appearance of the few trees and shrubs on it, seemed fully to corroborate. Bivouacked for the night at 'Wakamarino; a little village on the banks of a small river.

Early the next morning we recommenced our march towards Waikare lake; the old chief of 'Wakamarino accompanying us. An hour's walking brought us to Waikaretaheke, a rapid stream of about 4 feet deep, caused by the exit of the waters of the lake towards the sea, and which here most outrageously tumbled over a long and sloping bed of rock. A bridge of trees, (one of the best-constructed native bridges I had ever seen,) was thrown across the foaming torrent; and, though strongly secured together, it seemed as if every rush of the bounding water would carry it away. A nervous person would not have hazarded himself on such vibrating and precarious footing.

The beauty of the spot rivetted my attention for a few moments, and I almost determined to venture a sketch. I gathered a Moss (128) in this locality; and, a little further on, a fern (269), a species of *Polypodium*, [*P. viscidum n. sp.*, *W. C.*] every frond of which was more or less covered with pappus, downy seeds, and other such light substances, blown by the winds. We soon arrived at the village, situated on a high headland, jutting into the northern side of the lake; the gateway of which was, as is often the case, embellished with a pair of huge and hideous clumsily-carved figures, besmeared with red pigment, and grinning defiance on all comers. The wind now blew so very strong, that it was not possible to cross the lake in such frail canoes as this people had at command; so I was obliged to pitch my tent here, although it was far from easy to find a suitable place, owing to the great unevenness of the ground, its unsheltered situation, and the very high wind. Here I was confined a prisoner until the morning of the 29th, when, the wind lessening, I effected my escape, crossing in safety to the opposite shore. I made, however, the most of my time whilst here, and was amply rewarded with specimens of new plants. First must be mentioned another beautiful species of *Fagus* (132), with small, broad, adpressed, coriaceous and biserrate leaves which grew plentifully in the immediate vicinity of the lake, and possesses, especially in its young state, most elegant foliage. Unfortunately, however, I could not find a single flowering specimen, although I assiduously sought for such, and hired natives to climb the trees in quest of them; a few capsules of the preceding year were all I could procure. The natives wished me to believe that this tree did not bear fruit every year, asserting that they had also remarked, that when this tree bore fruit, other trees did not! They call it Ta'wai. It grows from 30—50 feet in height, and is not so robust as the large-leaved species. Here also the oval-leaved kind grew abundantly, attaining a considerable size and height. A graceful shrub, of the order *Compositæ* (122), with suborbiculate leaves, and sub-sheathing petioles, I found near the water's edge, but in dry spots; and secured flowering specimens and fruit. This shrub grows in rather a straggling divaricated manner, from 2—3 feet in height. I am much gratified in having a fine young plant now living from seed sown by me on my return from my journey. On the sandstone rocks I found a beautiful minute *Lobelia* (263), a perfect little gem. It was scarce, and grew where it could only have been nourished by the spray and waves of the lake. Here also, among the rocks, was a species of *Plantago* with lanceolate leaves (126), new to me. A fine *Hydrocotyle* (123) I found in the same locality. Just above, on the banks, I gathered specimens in fruit of a peculiar (*Araliaceous?*) tree (125), which was common here: it grew in a straggling manner to the height of 25—30 feet. A large and new species of *Coprosma* (120), a small tree from 10—14 feet high, I also obtained in fructification; with a few fine *Mosses* (118, 156, &c.) Rummaging about among the dry and more elevated rocks, I found a pretty little fern (270), a species of *Asplenium* [*A. Colensoi, n. sp. ms.*]; and, on the top of the little promontory on which the village was situated waved a very handsome *Dicksonia* (271), [*D. lanata, n. sp.*, W. C.]. This elegant fern was abundant in this locality; some of the fronds were 24—30 inches in length. Had I not been very anxious to prosecute my journey, I might have spent an agreeable time at this romantic spot; such, however, was not the case. I was among a tribe noted for their reckless ferocity; to whom, secluded as they are in their mountainous retreats, a white man was indeed a stranger. They had scarcely any food for their own use; and although they exerted themselves to the utmost in their endeavour to be hospitable towards me, they could only allow us two scanty meals of roots and herbs per diem.

I obtained from the lake some fine specimens of *Unio*, the only living thing (according to the natives) which inhabited its waters. I supposed the sheet of water to be about six miles in diameter, but could only guess at the probable size, owing to its very irregular shape. The lake is very deep and clear, and the bottom rocky. A peculiar sea-bird, called by the natives, Tété (which often flies irregularly at night, making a noise resembling *tee-tee-tee-tee*, rapidly uttered, whence its name) is sometimes caught here in large numbers. From the natives' account, it would appear that these birds at certain times resort to the tops of the highest and barrenest hills, where the natives assemble and make fires on foggy nights, which fires decoy the birds thither, when they are easily taken with nets. I have often heard this bird at night, but have never seen one. It is, I think, highly probable that it may belong to the genus *Procellaria*.

29th. This morning, the wind lessening, we hazarded a passage, and crossed in safety to the opposite shore. The "everchanging" woodland scenery appeared most lovely, as we, in our little canoe, wound round the bases of these everlasting hills. Here, for the first time, away from the immediate sea-coast, I noticed the littoral species of *Metrosideros* (*M. tomentosa*, A. Cunn.) It grew, however, in similar rocky situations close to the water's edge, and after the same very diffuse manner. Parasitical on its branches, in great abundance, flourished *Loranthus tetrapetalus*, Forst. (112), gorgeously displaying its profusion of scarlet blossoms. On getting into shallow water, I obtained specimens of a graceful *Myriophyllum* (113), which was attached to the bottom of the lake, and grew completely under water to the length of several feet. We landed at the margin of a wood, the trees of which overhung the lake, where, at the pressing request of the natives who lived near I consented to spend the remainder of the day and night. As they did not, however, gather together until very near evening, I had a little time to botanize; and which, I trust, was fully used. It was indeed a lovely spot; that constant humidity, so requisite for the full development of the varied tribes of the Cryptogamic family in all their beauty, was ever present in these umbrageous solitudes. I commenced my search at the water's edge; and first gathered specimens of a peculiar *Rumex*-like herbaceous plant (116) growing within the water. Close by, a small *Myrtaceous* shrub (115), clothed with *Lichens* and *Jungermanniæ*, attracted my notice; this shrub attained the height of 7 feet. A peculiar little *Jungermannia*-like plant (155) next entered my vasculum. Of *Musci* and *Jungermanniæ* I gained several specimens, many of which were fine and graceful plants (vide, 157, 158, 159, 175, 176, 164, 151, 152, 147, 135, &c.); among them, I hope some new species will at least be found. A beautiful foliaceous, though small, *Lichen* (150) occurred here on the trunks of living trees having spherical black *soredia* on its *under*-surface which appeared to me quite unique. Another species (172), bearing *scutellæ* on the edge of its *thallus* grew also on these trees. I here obtained five specimens of A. Cunningham's new genus *Ixerba* (114), and in doing so almost dared to hope that I had gained a *second* species from its anthers being *scarcely ovate*, the style *twisted* its larger corymbs, containing 5-10 flowers; its lanceolate leaves, shorter and broader; its much larger size and robust habit attaining the height of 40—50 feet, and being too one of the commonest trees of these woods; in all which it differs from *I. brexioides*, Cunningham's plant, which, in these particulars, is thus described by him: "*Antheræ* ovatæ acuminatæ. *Stylus* 1, angulatus, continuus, versus apicem attenuatus. *Flores* corymbosi, pedunculis (uncialibus) plerumque trichotomis. *Folia* elongato-lanceolata acuminata, 4-5 uncialia; (5-6½, W. C.) *Arbor* elegans viginti pedalis et infra.—A tree of very rare occurrence." A. C. in Ann. Nat. Hist., vol. iii, p. 250.—I also procured specimens of a new species of *Coprosma* (117), a graceful shrub, 3—6 feet in height, with oblong-lanceolate leaves and a species of *Senecio ?*, which appeared new to me (129) with a peculiar plant (121), which I supposed to be a large *Polytrichum ?* growing in dry spots; of this, however, I could not find a single specimen exhibiting either flowers or fruit. In this locality, I also gathered specimens of a species of *Solidago* (119), a small shrub, 1—3 feet in height, which, from habit and general appearance, I supposed to be distinct from *S. arborescens*, Forst.; and a fine shrubby *Leptospermum* (177), which may prove a new species. Here, also, I was so very fortunate as to obtain fine specimens of several new species of the beautiful genus *Hymenophyllum*. *H. Franklinianum* (272, *n. sp.* W. C.) a lovely creeping fern, pendulous on living trees, whose trunks it completely clothes with the exuberance of its fronds. I have done myself the very great pleasure of naming after that kind patroness of science, the Lady of His Excellency Sir John Franklin, &c. &c., Governor of Tasmania, who lately visited these Islands.

H. pulcherrimum, (273, n. sp. W. C.) another beautiful and fine species, is also epiphytal on trees in the darker recesses of the forest. This is one of the largest species yet found in New Zealand, some fronds measuring fifteen inches in length. *H. spathulatum*, (274, n. sp. W.C.) a fine species, is parasitic on trees overhanging the lake. This fern exhibits a very peculiar appearance, from the circumstance of its having a number of black botryoidal masses on the edges of the segments of its fronds. I, at first, supposed I had discovered the type of a new genus; but, on examination with such means as I had at command, I conclude these masses to be the work of some insect. I noticed this species only to be so ornamented. *H. atrovirens*, (275, n. sp., W.C.) a small dirty-looking species found on wet rocks and stones in low shaded spots, is apparently very near *H. flexuosum*, R. Cunn., differing, however, in its involucre, &c. the involucre in that species being "orbiculate." *H. revolutum*, (276, n. sp. W.C.) a small species, epiphytal on the reclining branches and trunks of trees, in damp and shaded places; in affinity very near *H. Tunbridgense*. The deeply laciniated margins of the segments of its frond, will, however, be found constantly revolute. After all it may prove but a variety of *H. Tunbridgense*, of which English species I have not an accurate description. The elegant little *H. semibivalve* (277) grew plentifully here on fallen and reclining trees. A handsome species of *Polypodium* (278) apparently a variety of *P. Grammitidis*, *R. Br.* but having its lobes deeply incised and sub-pinnatifid; and an elegant species of *Grammitis*, (279, *G. ciliata*, *n. sp.* W.C.) I also obtained in this locality. Both these ferns are epiphytal on living trees. *G. ciliata* has close affinity with *G. australis*, *R. Br.* from which, however, it differs in its being a much smaller plant, in having its *sori* more prominent and crowded, and in being villous underneath and beautifully ciliated at the margin. Several charming mosses (280) too, I gained during my very short stay here, among which I was very much pleased to find in fruit the very beautiful one whose fronds I had before detected in a wood near Turanga, (vide sp. No. 45). The mosses (280) must speak for themselves; I hope, however, that some new species may be found among them.

The next morning I recommenced my journey; experiencing no little difficulty in the obtaining of a guide over the mountains, in which service I was obliged to enlist all my persuasive powers. We commenced ascending from the shores of the lake, through dense woods chiefly composed of *Ixerba* and *Fagus*. Having gained the summit of the range we found travelling easy; for, in these forests where the broad-leaved *Fagus* (No. 88) is the principal tree, there is but little underwood; indeed, plants seem as if they did not like the shade of these trees. One of the first things that attracted my attention this morning was a peculiar little plant (163) with succulent white berries, growing here and there at the foot of large trees, wherever the light decaying vegetable mould was deepest. I sought assiduously for perfect specimens, and was at length rewarded with them in flower and fruit: I have not met with any thing like it in New Zealand. A pretty shrub with an elegant leaf (171) abounded here; as did another shrub (165) possessing the habit of *Myrsine,* but neither of these could I detect in flower nor fruit. A new *Orchideous* plant sent in acid (262) I procured perfect specimens of from the foot of the trees in these woods; it grew, however, singly, and appeared scarce. The natives told us that we might expect rain on these mountains (they having a proverb to the effect that it is never dry in these parts) and so indeed it came to pass.

After we had proceeded for about two hours it began to pour down in torrents; no shelter was at hand, so we were obliged to continue on in the cold and pelting rain. I much regretted the state of the weather, as I had every reason to expect new and rare plants in these elevated regions. The trees and shrubs large and small, were all beautifully festooned and draperied with *Jungermanniæ* and *Musci,* as if wound by fairy fingers, evidencing the eternal humidity of these forests. The family of *Filices,* too, presented the most lovely spectacle this day I ever witnessed. In these deeply shaded recesses, my enchanting *Todea superba* (281) and graceful *Lomaria rotundifolia* (265 ante,) flourished in perfection; the densely crowded and dark green fronds of the former contrasting so beautifully with the light-coloured and elegant membranaceous ones of the latter; their fronds grouped in ever-living circles of green, from 5 to 6 feet in diameter; many single fronds of either fern measuring upwards of 3 feet in length. With them grew two species of *Aspidium*; one, *A. pulcherrimum,* (282, n. sp., W. C.), a truly fine plant, is one of the most lovely ferns in New Zealand, many of its gracefully flaccid fronds measuring upwards of 4 feet in length. The other, *A. Waikarense* (283, n. sp., W. C.), is also handsome though smaller and much more rigid in its growth and habit than the preceding, having the lower divisions of its *pinnæ*, which are crowded, subimbricated on its *rachis*. Another new species of *Lomaria* (284, *L. latifolia*, W. C.), was growing in these spots; in affinity this fern comes very near *L. procera*, Spreng., from which, however, its solitary habit, broader *pinnæ*, which are fewer in number and deeply serrated and not decreasing in size downwards, sufficiently point out the distinction. I gazed entranced, notwithstanding the warring of the elements, upon these beautiful productions of nature, and wished much to secure good specimens. It was necessary, however, under existing circumstances, to content myself with a couple of samples of each species, and these, too, hastily gathered and put up dripping wet, to the very great astonishment of the natives. Proceeding on, I found, in more open situations, a pretty little iridaceous plant (154), perhaps *Libertia micrantha*, A. Cunn., (or a new species) growing most profusely, reminding me in the distance of the "daisied meads" of my father-land. Ascending yet higher in pelting rain, I discovered a handsome species of *Viola* (160), bearing a large white blossom with a fragrant smell. I hastily removed this interesting plant from its mossy bed to the bosom of my cloak, now nearly as wet as the bank where the flower originally grew. Along with it was a small *Epilobium* (161), in leaf only with axillary inflorescence. In this neighbourhood, I obtained specimens of several plants of the *Coprosma* genus, which appeared new to me (167, 168, 169, 170); all small shrubs, from 3 to 5 feet in height. A small divaricated shrub without fruit, but apparently a *Myrsine* (179), I also took a memento of. A fine *Lycopodium* (173) with terminal spikes of fructification growing pendulous on trees attracted my attention; in habit and growth this plant much resembles *L. Flagellaria*, Hook., of which it may possibly be a variety.

A *Restiaceous* plant (153), a species rather of *Luzula,* perhaps a variety of No. 264 already noticed, I gathered in this locality. A small tree with black bark, which appeared to me to be a species of *Laurus,* was also obtained in flower (197). This plant reminded me of a shrub which I discovered at Wairua in the northern parts of the island in 1840; specimens of which (numbered 14) were sent you in 1841; they both evidently belong to the same genus. A very delicate white *Lichen* (196) which here and there grew on the trees, as well as a fine terrestrial white *Moss,* (202) without fructification, I next procured. The densely wooded mountains over which we this day passed, were chiefly composed of sandstone which shewed itself in various stages of decomposition in the very many slips in their sides. In descending one of these gorges, I found a *Pteris* (285), *P. montana,* n. sp., W. C. a small glaucous, glabrous species, in affinity very near *P. Brunoniana,* Endl., of which it may possibly prove, on further examination, to be a variety. A smaller variety of *Polypodium sylvaticum* (No. 55, already noticed), I also obtained in this neighbourhood. After a silent and persevering march of some hours through the very cold rain, for in threading our tortuous way through the endless mazes of pathless forests in such weather as this, we found it impossible to keep ourselves warm, we began to shiver with cold, and determined on halting at the first sheltered spot. By the side of a rivulet at the bottom of a hill, we found a deserted hovel, which, though open on all sides, offered us a better shelter from the pitiless showers than we had expected to meet with in such a place. We repaired our hut with tufts of the different *Carices* that grew hard by, and pitched my tent; then throwing off our dripping garments and kindling a fire, we endeavoured to make ourselves as comfortable as possible in our present circumstances. Fortunately we had a few potatoes with us, which, not knowing how long this weather might continue, we divided *una voce* into three small portions, so as to afford us two meals for the morrow. The rain continuing to descend in torrents, swelled our little brook to a large stream, causing me to fear that the narrow level spot on its banks, on which we were now encamped, would soon be overflowed.

Dec. 31st.—Daybreak this morning found us much the same as daylight last evening left us,—with water on every side. The past night was one not likely to be soon forgotten. The heavy rain and rattling hail which unceasingly poured down,—the vivid lightnings and hollow-sounding thunder reverberating awfully in never-ending echoes among the hills,—the angry winds which furiously rushed in fitful roaring blasts through the ancient forests, rocking, and cracking, and lashing the monarchs of centuries as so many saplings of a year, stripping their leafy honours, and breaking off their branches, hurled them to the earth,—the hooting of owls, and shrieking of parrots, which flew affrightedly about seeking shelter,—all united to declare, in a voice too plain to be misunderstood, the great commotion Nature was undergoing;—fit knell for the departing year. The morning was most gloomy; the rain still incessant and our cold, wet, lonely, and all but starving situation, was any thing but pleasant; when, as if we wanted somewhat more to taste of the very *acmé* of cheerlessness, our only guide deserted us, returning to Waikare! He had intimated as much last evening, and I had kept a watch over him; he easily, however, found an opportunity of leaving us. My other natives were all from distant parts of the island, and knew no more of these districts than myself. To go back to Waikare, was, from there being no proper path, not a whit easier journey than to go forward to the next village. The weather, however, confined us to our rude shelter, under which I, clad in light summer clothing, shiveringly sat, holding an old umbrella over my head. Towards evening the rain moderated, and I ventured to walk a few yards from the door of my tent. On the banks of the stream I obtained a fine specimen of a small but handsome shrub of the *Composita* family (148), probably belonging to the genus *Haxtonia*, or *Brachyglottis*. Here also I gathered magnificent specimens of my new *Viola*, which luxuriated on the mossy rocks on the banks of the stream. A *Lobelia*, too, (260) I also secured growing with the latter, which may prove to be only a variety of *L. angulata*, possessing, however, larger flowers, and smaller leaves. A *Gnaphalium* (261), probably identical with 130, already noticed, and an *Epilobium* (259) came next ; and a *Pittosporum* (134), perhaps *P. tenuifolium* in fruit. At night, rain still persevering, I called the natives to council, to consider what we had better in our exigency do; so we unanimously agreed, "rain or shine," to proceed on our journey to-morrow morning, trusting somehow or other to find our way; a determination to which we were compelled through hunger, having consumed our last scanty meal.

Jan. 1st, 1842.—Early this morning the rain ceased; but as heavy clouds still shrouded the face of heaven, it was just as wet from the dripping trees and rank foliage around us in these deep valleys and dark forests, as if it were still raining. We commenced our wet and cold march *sans* breakfast with perhaps a more hearty will than if we had fared sumptuously; our route lay by the banks of the river, which we crossed and recrossed repeatedly, making our walk very unpleasant. Here in these deep secluded glens I discovered a new species of *Lomaria* (286), *L. heterophylla*, W. C. not of Desvaux, (*L. Colensoi*, Hook. fil. in Ic. Pl., Tab. DCXXVII, VIII), some of whose immense pinnatifid fronds measured near 3 feet in length. Here also I discovered a large climbing Fern, a peculiar species of *Aspidium* (287), *A. Cunninghamianum*, W. C., differing much from all other species of *Aspidium* that have come under my notice. This Fern is succulent, coriaceous, and glabrous, and is the largest Fern found climbing trees yet discovered in New Zealand ; some of the fronds measured, including stipes, near 3 feet in length. I dedicated this plant in memory of that very zealous botanist, my much lamented friend, the late Allan Cunningham, Esq. In this locality I also found epiphytal on reclining trees, a new species of *Hymenophyllum* (288), *H. villosum*, W. C. A beautiful long-fronded and pendulous Moss (174) grew solitarily in the sides of ravines in these damp woods. I could, however, only detect a single specimen bearing capsules; two were on it, one of which, with some barren fronds, I send you. I gathered specimens of other Mosses (182, 183) which appeared to be scarce, and of a very large-leaved *Jungermannia* (186), and of a small decumbent plant without flower or fruit (180).

About noon, to our very great surprise, our runaway guide overtook us, bearing a large basket of fine potatoes on his shoulders, for which he had purposely gone back all the way to Waikare, in that heavy rain, in order that we might not suffer from hunger. I could not but applaud the man's kind consideration, whilst I disapproved of his leaving us in the manner he did, without saying a syllable as to the object of his returning. This, however, is quite in keeping with the national character of the New Zealander. Prompted incessantly by an ever-restless and indomitably independent principle of doing some capricious work of supererogation, their defined duties are left unperformed, they often sadly try to the utmost the patience of those by whom they are employed. In their own language they have a word (*pokanoa*), which, while it fully conveys the force and meaning of the foregoing remark, is, from the frequency of the occurrence of such behaviour, in daily if not hourly use by every native of New Zealand. Nor is this capricious way of acting confined to those who are still in their novitiate; on the contrary, those who may have been for years in your employ are equally, if not more prone to such conduct. At two P.M., we arrived at Ruatahuna, a small village, surrounded on all sides by dense forests, where we were hospitably received. The natives soon cooked us some potatoes, on which we made a very hearty meal.

I remained for three days at this village, during which my whole time was fully occupied with the natives. On the morning of the 4th we again recommenced our journey. Our route, at first, lay over very high and steep hills, clothed with forests to their summits; which having attained, we descended to a deep valley, where ran a rapid brawling stream, from 2 to 3 feet in depth. By the banks of this river, among gigantic ferns and underwood, decaying logs and fallen trees, we travelled on, every now and then crossing the stream, which we certainly did this day more than fifty times. This was by no means pleasant, but there was no alternative. I observed in one place where we crossed the river, a small plant, under water, growing thickly in its gravelly bed, where the stream was deep and rapid; I got up a quantity, but could not detect either inflorescence or fruit; from habit and general appearance I believed it to be a species of *Epilobium;* but unfortunately I subsequently lost the specimens thus procured. On the banks of this river, I first obtained a fine arborescent *Dicksonia* (289), *D. fibrosa*, n. sp., W. C. This fern, in its native forests, attains a height of 18 feet. Its large and spreading living fronds measure from 6 to 9 feet in length; these, however, are generally few in number and deciduous. In affinity, it is near *D. squarrosa*, Sw., from which species, however, it may readily be distinguished, even at a distance, by its very bulky caudex, composed of thick layers of fibres, resembling, at first sight, the fibrous interior of the husk of the cocoa-nut. Some trees I noticed possessing a trunk from 14 to 16 inches in diameter. The natives separate this fibrous epidermis into thick slices, which they use for many purposes in the construction of their houses and stores, being easier cut by them, with their scanty means, than wood. A piece as large as a small plank may readily be obtained. They find it, also, to be much more effectual than timber, in excluding rats and mice, as these animals cannot gnaw through this dry and fibrous substance with the facility which they can through wood. In this locality I also found a species of *Myrtus* (194), a small tree, which I believe to be identical with one discovered on the banks of the River Wairua in 1841, and numbered 23 in the case of specimens sent you in that year, bearing orange-coloured and edible berries. It also seems to be a closely allied species to No. 115, already noticed. This graceful shrub, or small tree, grows to the height of 10 or 12 feet. About four P.M., we emerged from the dense woods to a large plain, covered with *Pteris esculenta*, the first plain of fern we had seen for several days. Passing over this plain, I obtained from a boggy watercourse, a small plant, with white flowers (189), a species of *Marchantia* (198), a *Hydrocotyle* (199), and a species of *Hypericum* (200). The latter appeared to me to be very distinct from *H. pusillum*, D.C., in being a much larger plant, of *erect* growth, with oblong calyces, and oblong-ovate, or obovate, undulated and margined leaves; whereas *H. pusillum* is described "caule debile *prostrato*, foliis *ovatis* obtusis, calyce *lanceolata*," &c. We halted this evening at Te Waiiti, a fenced village, situated on the banks of the river at the end of the plain. The next morning we resumed our journey. On ascending the first hill, I found a small plant growing in a rivulet (195), perhaps a variety of 189, already noticed. A little further on splendid specimens of *Lomaria linearis* grew luxuriantly about the margins of woods near the river. Here, also, were several fine plants of *Dicksonia fibrosa*, their trunks grotesquely hewn by the natives into all manner of uncommon shapes in cutting away their fibrous epidermis, for the purposes already mentioned. Discovered another *Lomaria* this morning (290), in ascending the first wooded hill after crossing the river. This species, (*L. deltoides*, n. sp. W. C.) approaches very closely to *L. deflexa* (n. sp. No. 268), already noticed; differing, however, in its habit, manner of growth, size, and in being hairy underneath, and ciliated on the margins of its *pinnæ*. In a damp forest I obtained fine specimens of my new *Davallia* (No. 56), already mentioned, some fronds measuring 18 inches in length. I only observed this fern growing in two places in the whole of my journey, and not above half-a-dozen plants in either spot. Ascending the barren and lofty hills before us, I found, near their summits, a species of *Composita* (185), which I had not previously seen. These hills were formed chiefly of broken pumice and ashes. The sun was intensely hot, and the roads, in several places, worn into deep and hollow gorges, were extremely dry and dusty, our feet, and even our ancles, being often completely buried in the loose and broken pumice through which we had to travel. Gaining the summit of the highest hill, the view was most extensive and striking. Immediately beneath, meandered the *Wirinaki*, a bold brawling river, flowing quickly over its stony bed, and possessing water sufficient to float a moderate sized boat; beyond, rose barren hills of all possible irregular shapes and heights; further still, an extensive plain extended E. and W. as far as the eye could reach; next, a chain of lofty, table-topped hills bounded the range of vision; whilst, here and there, far away in the extreme distance, several high and isolated mountains reared their barren heads above the horizon. On the left appeared Tauwaura, a high mountain in the Taupo district; Paeroa and Kaingaroa, near Rotorua, presented themselves in front; whilst, to the extreme right, Putauaki, the high mountain, near Wakatane, on the east coast, upreared its two-peaked summit to the clouds. Here, notwithstanding the pleasurable height to which my imagination had been raised, whilst engaged in contemplating the magnificence and extent of the prospect before me, it soon sank below its ordinary level, on finding that not a human being dwelt in all that immense tract of country on which my eager gaze then rested! The grass grew, the flowers blossomed, and the river rolled, but not for man—solitude *all!* Even the little birds, few though they were in number, seemed to think with me, for they flew from spray to spray, around and about my path, with their melancholy "twit, twit," as if wishing to have all they could of the company of a passer-by. Their actions were quite in unison with my feelings, and I could but exclaim, "Oh! Solitude, where are thy charms?" etc.

Descending to the banks of the river Wirinaki, I was rewarded with the discovery of a few new plants: among them a linear-leaved *Coprosma* (178), a procumbent and straggling shrub, in habit and general appearance much like *C. acerosa,* doubtless identical with that species; two species of *Epilobium,* one a very beautiful species (188), which I believe to be the same as one the leaves of which I had previously noticed in the valley of Waiapu, (vide sp. no. 10, &c.), the other with densely linear and serrated leaves (187); different kinds of *Gramineæ* (184, 190, 201, this last a variety, perhaps, of number 53); a small shrubby *Dracophyllum* (192) and a *Carmichaelia* (193). Possibly this *Carmichaelia* may prove identical with that (no. 7 β.) observed without flowers or fruit in Waiapu valley. Crossing the water I obtained a very pretty little *Polygonum* (146), some plants of which were so small as not to exceed an inch in height, although bearing both flower and fruit. Proceeding over the long plain I had seen from the hill-tops, and which was exceedingly barren, I got specimens of some small *Restiaceous?* plants (181, 191), which, with *Leucopogon Fraseri* and the small *Polygonum* already noticed, comprized the vegetation of this very desolate place. Night was fast closing around us, and we quickened our pace, although excessively tired, in hopes of finding a few sticks wherewith to kindle a fire, for none at present appeared within the range of our eye-sight. After some time we met with some small dry scrub (*Leptospermum scoparium*) on the bank of the river, where we bivouacked for the night. At a very early hour the next morning we recommenced our journey. Crossing the rapid river, Rangitaiki, at the end of the plain, (which at the fording-place we found to be breast-deep, and which we were obliged to cross in an oblique direction, that we might not be swept down by its strong current), we travelled over a country more sterile, if possible, than that of yesterday. An interminable succession of dry and barren hills of lava, pumice, ashes, and other volcanic matter, where the stunted vegetation was all but quite burnt up with the long drought, afforded a very scanty gleaning to the Botanist. I was rewarded, however, with a few new plants in this day's toilsome march. A fine species of erect *Cardamine* (138) was found at Mangamako, a little wood through which we passed; a very graceful *Dracophyllum* (145), a small shrub, from two to four feet in height, grew sparingly here in the little dells between the hills; and in the same locality I obtained a small species of *Gnaphalium* (137 *a*, &c.), which appeared to differ from any yet noticed. Here also I procured specimens of two curious little plants of *Compositæ* (140, 141) which sprung up in dense patches on the dry and broken pumice. Towards evening, we arrived in the neighbourhood of the Rotorua Lakes. When traversing a deep bog, I discovered a very peculiar little leafless monopetalous-flowered plant, growing in the mud (143). On nearing Rangiwakaaitu, the first and southernmost lake, I was much gratified with the very lovely appearance of a truly beautiful species of *Leptospermum* (144), a small tree from 15 to 25 feet in height, which flourished here, growing in clumps and rows as if artificially planted. These trees were literally laden with a profusion of beautiful blossom; and, from there being no underwood about them, not so much as a tuft of grass, they looked the more charming and conspicuous. Another circumstance struck me as singular: no small or young trees of the species could be met with; all were old trees of many years' growth. I say old, because the *Leptospermum* is a slow growing plant. Beneath them I saw a curious woolly moss (139,) which, though sought for assiduously, I could not detect bearing any fructification.

We had intended to make Tarawera (the second lake where some natives resided) our halting-place for this night; but, although we had nothing to eat, we were so excessively tired as to bring up on the white-gravelled shores of the placid Rangiwakaaitu. I offered my natives the choice of staying supperless where we were, or proceeding to Tarawera distant about three miles, and there getting food; fatigue, however, overcame hunger and they chose the latter. The whole face of the country in the neighbourhood of the lake was overspread with massy blocks of lava, scattered in every direction, many of which were vitrified on the surface.

The ground rose gently from the lake, which appeared to occupy a deep hollow, and I could but venture to suppose that this might perhaps have been the crater of that volcano, which, in some bygone age, inundated the adjacent country with showers of pumice and ashes.

Jan. 7th.—Early this morning we arose, feverish, stiff, and sore, from our gravelly couch to recommence our march. We soon came within sight of the place where the hot springs were situated, from which the steam and sulphureous vapours continually ascended in dense white clouds. The air this morning was cool and bracing. After travelling about an hour and a half we arrived most ravenously hungry at Tarawera lake. Here, at a little village on its banks, we procured some potatoes, on which we breakfasted with a hearty zest. At this place were several small hot springs, which flowed out of the earth near the edge of the lake; the water of some being hotter than the hand could bear. Just within the lake the water was warm, a little further on it was luke warm, and, further still, cold; so that these natives have baths of every requisite degree of heat always ready without any trouble whatever. The water of the lake I suppose to be specifically heavier than the sulphuretted hot waters which flowed into it; as, whenever the natives of the village wished to drink, I observed them to go into the lake and dashing the uppermost water aside with their feet quickly take up some from beneath; which, they said, was good and cold. The natives of the village informed me that at a spring on a hill at a little distance, the water was quite hot enough for the purpose of cooking, for which they often used it. Sulphur, too, abounded there, and was frequently "thrown up" out of the earth, from a place whence steam and smoke ever ascended. My curiosity being excited, while breakfast was getting ready, I set off with a native of the village as a guide to the boiling spring; but after gaining one hill and not perceiving any sign of the same, and being almost exhausted from want of food, hunger overcame curiosity and I returned to the village. I have several times been surprised at the great carelessness which I have exhibited towards rare natural productions, when either over-fatigued or ravenously hungry; at such times botanical, geological and other specimens, which I had eagerly and with much pleasure collected and carefully carried for many a weary mile, have become quite a burden, and have been sometimes one by one abandoned; to be, however, invariably regretted afterwards. Breakfast ended, we, accompanied by the chief of the village, paddled to near the opposite extremity of the lake. This sheet of water is about three and a half miles in length, and from one to two miles in breadth; surrounded on all sides by barren hills and very deep. Landing and walking about two furlongs, we came to Kareka, another little lake much smaller than the preceding. Here we were obliged to wait some time before we could get a canoe, which being obtained, we paddled about a mile to the opposite end, landed and continued our journey. Gaining the top of a high hill we had a fine prospect of the principal lake of Rotorua: a noble sheet of water about six miles in diameter with a very picturesque island nearly in the midst. An easy journey of a few miles from this place brought us to Te Ngae, the mission station on the east side of the lake, where the hospitable reception I received from Mr. and Mrs. Chapman, quickly made me forget all hardships. I gained not a single botanical specimen of anything new this day.

At Te Ngae I remained a few days, during which time I visited Ohinemutu, a large and fenced town on the bank of the lake, celebrated for its boiling springs. The largest spring at this place was boiling most furiously, throwing out many gallons of water a minute, which rolled away steaming and smoking into the lake, a second Phlegethon! In the smaller springs, of which there were several, the natives cook their food, merely tying it up in a rude basket, of the leaves of *Phormium tenax*, woven together, and placing it in the boiling water, where it is soon dressed. For this purpose, and for that of bathing, they have made a number of holes through the crust or scoriæ, on which this village is principally built; so that it may truly be said, that this people dwell in houses erected over subterranean fires. The sulphureous stench which abounded here was almost insupportable. The blade of a knife, immersed for a short period in some of these waters, soon becomes, as it were, superficially bronzed. Accidents not unfrequently happen to children, and to dogs and pigs brought from a distance. The quadrupeds, however, of the place appear instinctively to be well aware of the heat of these streams, and shun them accordingly. The natives who live in this neighbourhood are, when travelling, easily recognized as belonging to this district, in consequence of their front teeth decaying at an early age, contrary to those of other New Zealanders: this is supposed to be caused by the sulphur with which these springs are impregnated, being deposited on the surface of their food in cooking, which consisting chiefly of roots, is mostly bitten into morsels with their front teeth. Here, on the very edge of the large boiling spring, several plants flourished exceedingly, particularly *Pteris Brunoniana*, Endl.

I brought away specimens of two plants which grew on the brink of the boiling water, and which seemed new; one, a species of *Carex* (136), the other, a plant of the order *Compositæ* (137), probably a *Myriogyne*, differing however from *M. minuta*, Less., the leaves of which are much smaller and sessile. I regretted not having a thermometer by which I might ascertain the temperature of the water. Fine specimens of crystallized sulphur abound in this neighbourhood; but from their delicate structure and extreme fragility, it is rather a difficult matter to convey them to any distance so as to preserve their beauty. The barren hills in the neighbourhood produced an elegant *Lycopodium* (215), which I suppose to be an entirely new species; and the same locality, afforded a new species of *Gaultheria* (216), a branching shrub, 4—7 feet in height. Near the station I observed a large *Ranunculus* (218) growing in low places in the vicinity of the lake; and in the thickets, close by, a species of *Rubus* in fruit (219), a shrubby plant, climbing over the bushes and young trees near it. Some natives informing me of a new and peculiar tree, which grew on Mokoia, the island in the middle of the lake, I crossed to it, and sought for the same, but found nothing new. From subsequent information, I was led to conclude that the tree of which I had been in quest was no other than the *Vitex littoralis* of A. Cunn.; *one* individual of which, according to the natives grew on the island, but not another in the whole district. I observed the natives continually masticating a kind of resinous gum, which was insoluble in water, and did not decrease through the process of repeated chewing; this, they informed me, they procured from the Pukapuka (*Brachyglottis repanda*, A. C.), assuring me that the swallowing of the substance would cause death. They pointed out the shrub, which, although slightly differing in general appearance, bore a strong resemblance to Cunningham's plant; yet as it was neither in flower nor fruit, I did not collect any specimens. It may, however, prove new. Mr. Chapman has kindly promised to procure me some of the resinous matter, and specimens of the shrub when the season comes. Through the kindness of the same gentleman I obtained, from a spring in the neighbourhood, several specimens of siliceous matter, deposited by the waters of the springs on twigs, leaves, &c. lying in it, some of which I inclose in the case now sent. The lake contains an abundance of small cray-fish, which are very good eating. Here are also two small kinds of fish, called by the natives *Kokopu* and *Inanga*, and a black bivalve a species of *Unio*; the whole of which are common in most of the fresh-water streams in New Zealand.

Jan. 13th.—Early this morning I left Te Ngae. Crossing the lake to the N.W. extremity, I landed, and once more recommenced my journey. We soon entered the dense forest, through which the road to Tauranga lies, and in which we travelled until sunset. Here, in a low, wet, and shaded spot, I noticed another new and peculiar species of *Lomaria*

(291, *L. nigra, n. sp.* W. C.) From the stony banks of Mangarewa, a small river running in a deep ravine, I procured specimens of a small *Cyperaceous* plant (221), which appeared to me to be new. In this locality, too, I discovered an elegant *Lindsæa* (292, *L. viridis, n. sp.* W. C.) and another fern, which has puzzled me exceedingly, but which may possibly be, after all, but a variety of *Aspidium hispidulum,* Swartz. I send you, however, a specimen (293) for minute examination. In travelling this day, I carelessly plucked a fern, which grew pendulous from a tree by the path-side, believing it to be *Asplenium falcatum,* Forst.; happening, however, to preserve the fragment, I have since examined it, and consider it a very distinct species; I have named it *A. Forsterianum,* in honour of that celebrated Botanist, whose name should ever be held in remembrance by all persons botanizing in the forests of New Zealand: a portion of my only specimen I send you (294). I also obtained in this forest some fine specimens of a *Tmesipteris* (296), which, if not possessing distinctness sufficient to constitute a new species, differs much from my specimens of *T. Forsteri,* Endl. in size and general appearance.

Whilst my natives were pitching my tent, I obtained a few specimens of *Jungermannia* (220, 223, 225, 226) and a Moss (222), with, apparently, a peculiar yellow lichen parasitical upon it. I hope that some, at least, of these may prove to be new. As the shades of night closed about us in the deep recesses of the forest, we were visited with numbers of green coleopterous insects which my natives caught, roasted, and ate. During the night the mosquitoes so sadly annoyed us as to keep us from sleeping. At an early hour the next morning we arose and resumed our march, continuing our course, as yesterday, in the forest. I gathered a fine Moss (227), a species of *Polytrichum*; and an *Urtica* with lanceolate leaves (224), which appears to be undescribed. Emerging from the wood, I discovered a fine *Gaultheria* (217), perhaps the same as the one from Rotorua, (216), already mentioned. From the summit of the hills where this long forest terminates, a fine and extensive prospect of Tauranga harbour, distant about fifteen miles, presents itself to the view. The road from this place to the sea-side lies through fern land, and is chiefly a descent the whole way. We arrived at the mission station about six P.M., without observing any thing worth noticing on the road thither.

At Tauranga I remained a few days; and on the 19th, once more resumed my peregrinations. Crossing the inner harbour which is wide and very shallow, we landed at the N.W. extremity of the bay where the road to the interior commences. Our route this day, after landing, being principally by the sea-side, afforded nothing new, save a species of *Anthoceros* (231), which grew in wet places on the pipe-clay cliffs. We bivouacked for the night by the side of a small stream where we were incessantly tormented with mosquitoes; and to add to our misery, my guides returned *sans céremonie,* leaving my baggage in the desolate wild; through which conduct we were obliged to remain supperless, not having had any food since our early breakfast. The next morning, after some delay from our want of guides, who were eventually obtained from a party of natives in the neighbourhood), we again proceeded, and entering a dense forest, travelled on for several hours, emerging at length on the top of Te Wairere, a very high hill, from the summit of which the view of the surrounding country is most extensive. Tongariro, a very high and still active volcano in the Taupo district, my guide assured me may be seen in clear weather from this place. Beneath us, in the extensive plain, the river Waiho, hence navigable for canoes, meandered, mingling its waters with those of the ocean at Puriri on the Thames. In the forest I obtained a few small Cryptogamic specimens (210, 211, 212, 213, 214), but no other plants attracted my notice as being either new or rare. Descending Te Wairere we halted at a brawling stream at its base to roast a few potatoes. Here, on the brink of the stream, I discovered a small tree of a genus unknown to me, (unless it may prove to belong to *Trophis*). I only observed one plant, which was about fifteen feet high, with smooth cinereous bark, solitary crimson fruit, and branches not spreading (228). On cutting its bark a profusion of thick viscid milky juice flowed out. A fine *Pimelva* (233) was growing plentifully here, which may prove to be identical with no. 24. A small *Jungermannia* (230) and a species of moss (232), were found by the side of the stream, the waters of which afforded a species of *Alga* (229). Leaving this place we crossed the river Waiho, which at the ford was nearly breast-high, and proceeded on, over the plain and through the extensive swamps, towards Matamata, a large native village, which place we reached late at night. In crossing the marshes I only noticed a *Coprosma* as being new, and of which I brought away specimens (207).

21st.—Early this morning I left Matamata, travelling in a S.E. direction towards Maungatautari, an elevated district situated nearly midway between the east and west coasts. In crossing a small river I discovered a peculiar Carex-like procumbent plant (206) growing in its bed, completely under water. As it was now the driest season of the year, and as the water of the stream was nearly 2 feet deep, this plant must necessarily be always immersed. A graceful-leaved *Hydrocotyle* (209) I also procured specimens of. After walking about eight miles over level and barren ground, we entered a romantic valley called by the natives Hinuera. This valley has on either side high and perpendicular volcanic rocks, composed of a conglomerate of pumice, scoriæ, obsidian, &c. On the south side of the valley this rocky rampart ran continuously for nearly two miles, while on the north side the hills bore on their table-tops groves and clumps of graceful pines, which contributed not a little to the beauty of the landscape. Halted at 2 P.M., to dine under a large and projecting crag, which, jutting out from the rocks on the north side of the valley, overhung our path. Here, beneath this rock, I discovered an elegant *Asplenium* (295, *A. Hookerianum, n. sp.*, W. C.), a species approaching very near in habit and affinity to *A. Colensoi.* I did myself the honour and pleasure of naming this graceful Fern in compliment to my much respected and talented friend J. D. Hooker, Esq., M.D., who, in the capacity of Naturalist, visited these islands in H.M.S. "Erebus," (one of the Antarctic Discovery Ships) in the winter of 1841. In a thicket in this neighbourhood through which we passed, I detected a graceful shrub of very slender habit (234) with peculiar hairy (strigoso-hispid) bark. This plant has only a few divaricated branches, and attains to the height of 6—9 feet. Proceeding hence we suddenly came upon a most remarkable subsidence of the earth in the midst of a large plain. After descending through a rapidly inclining and narrow defile having sandy slopes on either side (on which in dense patches grew that little plant I had found in low sandy places in Waiapu valley on the east coast, no. 29), I reached a level also of sand, and destitute of the least blade of vegetation; thence I descended an almost perpendicular descent knee-deep in sand to another level, where a subject for contemplation and astonishment presented itself. On all sides rose perpendicular and sandy cliffs, varying in height from 150 to 200 feet, for the most part white and sterile and composed of loose volcanic sand and pebbles to their very bases. At the bottom of this immense ravine a gentle stream wound its silent way, whilst a little further whole trees dead and charred (from whose sides the loose sand, &c., had been removed by the action of the winds and rains) stood erect, in the spots where many years ago they once grew at a depth from 1 to 200 feet below the present level of the soil!! I greatly regretted my being so much pressed for time in passing this place (called by the natives Piarere), but the Sabbath drew nigh, we had no provision, with several miles yet to go ere we should reach a village, and the loose sand through which we were now toiling we often sunk in up to our knees. Quitting this hollow, and ascending its S. W. side, I was again agreeably surprised and pleased in seeing the noble River Waikato, with its blue waters (here wide, and swift, and deep), rolling majestically along. This is the largest fresh-water stream I have yet seen in New Zealand. This river the natives navigate in their canoes from above this place to where it disembogues into the south ocean on the west coast, a distance of upwards of two hundred miles. In consequence of there not being any food here, we had to travel nearly five miles in an almost southerly direction by the bank of the river, ere we could cross it.

There, however, we found a rude bridge thrown across at a place where the river is very narrow, being confined within a sandstone channel through which it rushes with fearful velocity, eddying, and foaming, and carrying everything before it. The sandstone rocks on either side, through the softness of the stone, and the continual working of the waters, were fretted into a thousand fantastic shapes. Leaving the river, and ascending the western banks, we proceeded in a westerly direction for upwards of six miles, arriving at sunset, unwell, in pain, and much fatigued, at Wareturere, a small village in the Maungatautari district, where we were hospitably received by the natives. The sun, throughout this day, was intensely hot, and most of the country over which we passed quite free from wood, and very dry and dusty. Gained little indeed, in botany this day.

24th.—Early this morning, I resumed my journey. The fervent sun, unobscured with clouds, told of another melting day; and the high fern-brakes through which we had to force our way, abounded with their dreaded subtle yellow dust.

"In vain the sight, dejected, to the ground
Stoops for relief; thence hot-ascending steams,
And keen reflection, pain."

"Distressful Nature pants,
The very streams look languid from afar,
Or, through the unsheltered glade, impatient seem
To hurl into the covert of the grove."

Cheering my native companions in travel, we struggled on together up the steep hills. Reaching the summit of the wooded mountainous range, we descended over fern-land into extensive swampy plains. I observed that pest to agriculture, the large-leaved *Rumex*, very plentiful here. The natives say that the Negapuhi tribes (who live in the north parts of the island, and with whom they were formerly at continual enmity), introduced it in order to spoil their lands. I doubt, however, the *cause* assigned for its introduction here in the very centre of the island, but not the *fact*. At Poverty Bay and parts adjacent, the natives assert that the seed of this plant was originally sold them by whites for tobacco seed! It is now to be met with in several districts, in common with many other noxious European weeds. I have often noticed in travelling, certain spots abounding with the rankest vegetation, but without a single indigenous plant. The new comers appear to vegetate so fast as quite to exterminate and supersede the original possessors of the soil. In crossing a very deep and boggy place in the swamp, this morning, I again met with that peculiar and pretty little leafless plant already noticed, no. 143, in perfection. I found it, however, not a very easy matter to procure specimens, as it grew only on the deep black mud of the bog; fortunately, I succeeded in gathering some (208), without getting very deep into the mud. Here, in the midst of the swamp, a beautiful bird,* apparently of the crane kind, rose gracefully from among the reeds, and flew slowly around us; its under plumage was of a light yellow or ochre colour, with dark brown upper feathers. None of my natives knew the bird, declaring they had never seen such an one before. Leaving the swamp and entering on the plain beyond it, I discovered a new and elegant plant of the *Orchideæ* family and genus *Microtis*, possessing a beautiful carmine-coloured perianth, with pubescent scape and spike (203). It was, however, very scarce, and only grew in one low spot by the path-side. Most of the plants had flowered; but I was fortunate enough to procure two specimens that were still in blossom. I also met with a little *Restiaceous*? flexuose and procumbent plant (204), which grew in patches plentifully in this locality. A beautiful Moss, too, I discovered here (235), and noticed that pretty little *Lobelia*, already mentioned under no. 58, growing hereabouts in great profusion. Towards evening, in crossing a deep and watery swamp, I gathered specimens of a *Coprosma* (205), which may prove a new species; it was a small tree, 6 to 8 feet in height. At sunset, we reached the Mission Station at Otawao where Mr. Morgan resides. This place being almost in the midst of an extensive plain affords little entertainment to the botanist.

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* I am inclined to believe that it was a similar bird to the specimen herewith sent for the Museum of the Linnæan Society.

26th.—Again recommenced our journey towards the western coast. I did not gather a single plant during the whole of this day's march, although we travelled over many a weary mile of desolate wilderness, until some time after sunset. At one part of our route this morning, the scenery was of the most enchanting description; groves and clumps of that elegant Pine, *Dacrydium excelsum*, were intersected with small placid lakes, and level plains, free from underwood, the whole appearing as a work of art. Late at night we threw ourselves down to rest among the fern in a small and miserable village near the banks of the river Waipa. Rest, however, was out of the question, for our old implacable winged tormentors, the mosquitoes, were innumerable. The next morning before sunrise hungry, weary and sleepy, we willingly started from this wretched place, where our night, instead of being one of rest, had literally been one of continual torment.

Passing a deep and muddy water-course, I obtained specimens of a large-leaved *Myriophyllum* (238), which may probably prove to be a new species. The banks on either side of the water in which it grew being of deep mud made it difficult to procure good specimens. A half-an-hour's march brought us to a village on the immediate banks of the Waipa river. Here we obtained a canoe and got some food, which having quickly despatched, we proceeded down the river in our bark. This river has a very tortuous course, winding continually to all points of the compass.* Its width is pretty uniform, generally being from 70 to 100 feet, with a slow current. It is navigable hence for large boats, and the sides are, in many places, densely clothed with trees to the water's edge; among which *Dacrydium excelsum* shows itself conspicuous. In its banks which are mostly composed of alluvial earth, and which in some places are 14—20 feet in height, pipe-clay and volcanic sand sometimes present themselves to the view. At four P.M. we reached Ngaruawahie, the spot where the junction of this river with the Waikato is effected. As before the Waikato came rolling impetuously on, carrying its waters quite across the placid Waipa to the opposite bank. From this place the two rivers bear the name of Waikato to the sea, and justly so too, as the waters of the Waipa are completely lost in those of the deep and rapid Waikato. A little below Ngaruawahie we met a native in a canoe with a live and elegant specimen of the genus *Fulica*. I hailed the man, and purchased the bird, which he had recently snared for a little tobacco. It was a most graceful creature: and as far as I am aware, an entirely new and undescribed species. Its general colour was dark, almost black; head grey, and without a frontal shield; fore-neck and breast, ferruginous-red; wings barred with white; bill sharp; feet and legs glossy olive; toes beautifully and largely festooned at the edges; the eyes light-coloured and very animated. The bird was very fierce, and never ceased attempting to bite at every thing within its reach. I kept it until we landed, intending to preserve it; but it was late, and I had neither material at hand nor time to spare, and the animal too, looked so very lovely, that I could not make up my mind to put it to death, so I let it go: it swam, and dived, and disappeared. From its not possessing a frontal shield on the forehead (which is one of the principal generic marks of the Linnæan genus *Fulica*), it may possibly be hereafter considered as the type of a new genus serving to connect the genera *Fulica* and *Rallus*. Not a doubt, however, in my opinion can exist, as to its being naturally allied in habit and affinity to the former; I have therefore named it *Fulica Novæ Zelandiæ*. In size, it was somewhat less than our European species, *F. atra*. I gained not any botanical specimens this day, save the *Myriophyllum* already mentioned, although I had every reason to believe that many new and interesting plants would doubtless be found in the dense and ever-humid forests on the immediate banks of this noble river. Time, however, would not permit my delaying for that purpose.

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* I will just mention the direction of the river for the first ten miles, as I took it down from observation with my compass:

N.E.
N.
N.W., 1 mile.
S.S.E.
S.
S S.W.
S., ½ mile
S.S.W.
W.
W.N.W., ½ mile.
W.S.W.
W., 1½ mile.
W.N.W.
N.W.
N.
N.N.E., ½ mile.
N.
N.W.

Those bearings without distances annexed, I supposed to be under half a mile.

27th.—This morning, at an early hour, I recommenced my voyage down the Waikato. I found the river to widen considerably, being in some places from three hundred to five hundred yards in width, but very shallow. Its course, here, was not so sinuous and much more northerly than those portions we passed over yesterday. The land is low on either side, and, as I proceeded, several small and flat islands divided the river into channels. After paddling about twenty miles we beached our canoe on a small island, in order to breakfast. The river here is very shoal with a sandy bottom, which, together with the subsoil of the island on which we landed is of volcanic origin consisting of broken lava and pumice. I found nothing new among the vegetation of the islet. Near this place, the natives informed me, and at a short distance from the right bank of the river, is a large lake, in which are quantities of Kanae, (*Mugil* —) and Patiki, (*Pleuronectes* —) neither of which fish is found in the Waikato. The lake is named Waikare and runs into the Waikato a little lower down. As we proceeded, the banks of the river became more and more lovely being, in many places, clothed with the richest profusion of vegetation to the water's edge. Among the trees the Kahikatea (*Dacrydium excelsum*) was ever predominant. We noticed a Kauri (*Dammara australis*) to-day for the first time since we left the Bay of Islands; at seeing which my natives, whom I had brought with me from the East Coast, (and who had never seen one of these pines before it not being found in those parts), were much gratified.

Towards evening we passed several islets in the river, some of which were high and beautifully wooded, and noticed *Dacrydium excelsum* growing very close together in the forests. Gathered, overhanging the banks of the river, a specimen of *Parsonsia* with axillary inflorescence (239), which may, however prove but a variety of *P. heterophylla*, as that plant continually varies in appearance, hardly two specimens being alike. I also obtained a specimen of a small weak plant with opposite obovate and sub-spathulate leaves (240) from inundated places near the river, which was new to me; I could not, however, detect it anywhere in flower. Two specimens of *Epilobium*, (241, 244) one (244) a very fine plant; a *Myriophyllum* (245) and a linear-leaved floating plant [*Potamogeton*?] (247) which grew in the water, I also procured in this locality. Brought up, for the night, on a little open flat on the left bank of the river. The mosquitoes, as might have been expected, were in interminable clouds and most annoying.

Large quantities of an elegant species of *Cyperus*, (*C. fulvus? R. Br.*) grew here on either shore.

28.—Early this morning we resumed our course down the river which here begins to be under the influence of the tides. The morning was squally and lowering, with every indication of a gale at hand. As we neared the sea-coast the river became very wide, being from two to three miles across, and containing several flat islands. The water here is shallow. At noon we had a prospect of the outer range of hills on the West Coast; and a more dreary and sterile one cannot easily be imagined; high and broken ferruginous-coloured sand-hills destitute of the least vestige of vegetation. The wind setting in from the sea against the ebbing tide caused the water to become very rough, calling forth our united energies to keep our frail bark from swamping. At two P.M. we landed in safety at Maraetei, a station belonging to the Church Mission where the Rev. R. Maunsell resides, whose kind and hospitable reception quickly made us forget the little danger we had so very lately been in. Maraetei is on the immediate south bank of Waikato river, and only about a mile distant from the heads. The land on the southern side is very high and precipitous; while on the northern it is lower, and for three or four miles the very perfection of barrenness. Mr. M., who has been several times up and down the river, supposes the distance which we came by water to be from 130 to 150 miles; being very nearly what I had calculated it. The river decreases rapidly in width as you approach its mouth, which is exceedingly narrow, with a bar across it, on which is two fathom of water. Here, the breakers burst continually; one or two small vessels have, however, entered.

Feb. 1st—At six A.M. we left Maraetei; crossing the river in a canoe to the northern bank, and proceeded over the sand hills on our journey towards Manukau. We soon descended to the outer coast, over the interminable sandy beach of which we travelled until an hour after sunset; when greatly fatigued we halted for the night on the sands, about three miles within the Southern head of Manukau Bay. The land to our right this day was high and much broken, composed of sand and sandstone, and covered with verdure. The continual falling, however, of the sand, &c. of which these hills are composed, will, in process of time, cause them entirely to disappear. I noticed some plants, evidently species of *Edwardsia*, the habit and foliage of which differed from the one I have hitherto seen. I took specimens (243), and regretted there not being either flower or fruit. A little *Limosella?* (242) also grew here in the sand. On the face of a damp cliff, near a small water-course which trickled down the rocks, I discovered a peculiar succulent plant bearing a raceme of obovate red drupæ (246). These, with a moss (237), from the wet rocks in this locality, comprised the whole of my collection during this day's journey.

The next morning we continued our course by the sinuous shores of Manukau Bay. We soon reached a native village, where, gaining a supply of potatoes, &c., we recruited our strength, and, engaging a canoe, paddled to the upper extremity of the harbour, landing at Otahuhu, the isthmus connecting the northern and southern parts of the Northern Island of New Zealand. This isthmus is very narrow, only about three-quarters of a mile across, and an almost level piece of ground. There are not any forests in this locality, scarcely even a single tree; the eye wanders over a succession of low volcanic hills, bearing nothing but the monotonous brown Fern (*Pteris esculenta*), with here and there a shrub of *Coriaria sarmentosa* rising a few feet above the common denizen of the soil by which it is everywhere surrounded. This neighbourhood was once densely inhabited; but the frequent and sanguinary wars of the ferocious tribes of this benighted land, have all but entirely depopulated these fertile districts.

Having concluded to return overland to the Bay of Islands, we procured a supply of rice—the only portable article of food obtainable in these parts—for we were now about entering on an uninhabited route, and that too without a guide.

Early in the morning of the 4th, we left Otahuhu in a small canoe which we had borrowed, and paddling down the Bay about four miles, landed on the northern side of the harbour, and continued our course by the muddy winding shores of Te Wau, a little cove, where the path leading to Kaipara commenced. Here, while my natives were engaged in cooking our breakfast, I discovered a shrub of a genus altogether unknown to me. It bears an oblong succulent *bacca*, containing several large, angular, and irregularly shaped seeds (248); the mode of growth is diffuse and slender, with but few branches, and its height is from 5 to 9 feet. In habit alone it approaches some species of the *Coprosma* genus. There were several of these shrubs here, on the immediate banks of a little rivulet which ran through this dell; I did not, however, observe them in any other locality. Continuing our journey, I found, in ascending the first clayey hill from the sea-side, a handsome shrubby *Dracophyllum* (249), which, from its not being noticed by Cunningham in his "Precursor," I suppose to be a new species. This shrub is from 2 to 5 feet in height, somewhat rigid in its growth, and branched at bottom. It will, with the other new species already mentioned, No. 145, naturally fall between *D. latifolium*, Banks, and *D. Urvilleanum*, Rich., and thus connect the whole of the already known New Zealand species. We travelled on, over open and barren heaths, in a northerly direction, till sunset, but saw nothing new in these dreary and sterile wilds, save the *Dracophyllum* already noticed. Bivouacked for the night in a little dell, nestling among the close growing *Leptospermum*: not a stick being anywhere within ken large enough to serve as a tent-pole. Next morning we recommenced our journey in rain, the country for several miles being much the same as that of yesterday. About noon we passed some forests of *Dammara*, which were burning fiercely; some person or persons who had lately gone that way having set fire to the brushwood, which soon caught the forests. This is a very common occurrence in New Zealand, and often thoughtlessly done by the natives on purpose to cause a blaze, by which means many a noble forest of Pines has been entirely consumed. A species of *Metrosideros* was growing in these woods, a small tree about 15 feet in height, of which I took specimens (250). A fragment of a woolly-looking *Jungermannia* (251), a *Polygonum* (253), and a *Pimelea* (254) were also procured in this locality. All these, perhaps, have been already noticed.

On arriving at Kaipara, we found we had no means of crossing the harbour, a sheet of water which, from where we now were, at the extreme southern inlet of the harbour, to the nearest landing place on the northern shore, was more than sixty miles across. Our situation at this place was rather unpleasant, no natives being near. Rather, however, than retrace our weary steps to Otahuhu, we agreed to wait a day or two, in hopes of a canoe arriving at the landing-place. Here then we remained until the night of Tuesday the 8th, making fires on the brow of the hill, in order, if possible, to attract the attention of the inhabitants residing on the opposite shores of the water before us. No one, however, came; and on Tuesday, reconnoitring with my glass, I saw the roof of a hut about four miles distant, which, from its construction, I knew to belong to a white. Thither, without delay, I despatched two of my natives, who, to their credit be it said, willingly went, although they had to force a passage through mud and underwood the whole distance. At night they returned, with two whites, in an old, patched-up, and leaky boat, in which we gladly left this wretched place, where the mosquitoes were more numerous and intolerably annoying than I had ever before found them. So thick and tormenting were these insects at night, that I was obliged to leave my tent, and move about in my cloak from place to place, as they successively found me out. We had, in hopes of avoiding them, pitched our tent on the top of the hill, more than a mile from the water below, but without the least change for the better. On the morning of the 12th, after encountering no little hardship and danger, we landed near the upper end of Otamatea inlet, on the north-east side of Kaipara. Here the boat left us, and we soon found that our situation was ten times worse than before; for there was no path, nor the slightest indication of the treading of a human foot in these solitary and pathless deserts. Return we could not, for our boat was gone; stand still we dared not, as our small supply of food was fast diminishing; proceed we hardly cared to think of, not knowing whither our tortuous course would end, in a country like this, where we now, for the first time, were hemmed in among tangled brakes and primæval forests, bounded by a distant horizon of high and broken hills. In this exigency I determined on proceeding by compass in as straight a line as possible to the eastern coast; for although I had not a map with me, I was well aware that the Island was narrow in these parts. Words however fail to describe what we had to undergo in forcing our way through the horrid interwoven mass of shrubs, creepers, and fern, and prostrate trees, and swamps, and mud. Suffice to say, that by dint of extreme exertion I providentially gained the sand-hills at Manga'wai, on the east coast, by ten A.M., on Monday the 14th. Descending the hilly range on the sea-coast, I found there was an extensive inlet to cross, which, as the tide was flowing fast, I lost no time in fording; so plunging in, I waded to the opposite shore, the water being breast-high. I supposed my natives to be following pretty closely after me; and feeling quite an appetite for my breakfast, having walked nearly six hours this morning, I commenced looking narrowly about for fresh water, continuing my journey towards the coast. Here, exhausted though I was, I discovered and secured an hitherto unnoticed species of *Leptospermum*, a shrub or small tree, growing plentifully on the sand-hills, from 6 to 10 feet in height, bearing a villous capsule (255), apparently near *L. attenuatum*, Sw. Here, too, a shrub of the Order *Compositæ* (perhaps identical with *Cassinia leptophylla*), was seen profusely, of which I brought away a specimen for examination (256). Travelling on by the rocky coast, a little water-course which ran on the beach, afforded a small plant, perhaps a species of *Chara* (257); and on the sand near by, a *Chenopodium* (258), the only plants of which I took specimens. It was now past noon; the day was very sultry, and I, having recommenced my journey this morning long before sunrise, was tired, wet, and hungry, in a desolate and wild place, when I realized a conviction which had been for the last hour gaining ground in my mind, that I was alone. I retraced my steps to the sand-hills, and sought about, and shouted repeatedly, but all in vain; nought but the loud dash of the billow, as it broke on the lonely strand, with now and then a melancholy wail of the sandpiper, burst on my expectant ear. My natives somehow had strayed into another direction or lagged behind, so that I saw nothing more of them until after sunset on Tuesday the 15th, when they joined me on the outer beach of Wangarei Bay. During these two days I managed to subsist on some shell-fish from the rocks, the scanty sarcocarp of the fruit of the *Corynocarpus lævigatus*, Forst. (the large kernel of this fruit being in its raw state an active poison) and the inner young leaves of *Areca sapida*, Sol.; this latter plant affords good eating, a *bonne bouche* to any one in my situation. My natives were exceedingly happy the next night on finding that I was safe, as they knew not what had become of me. To their honour I would relate, that though they were bearers of provisions, yet they would not touch a morsel during the two days we were separated from each other, knowing that I was without food; saying, "What! shall we eat while our father is starving?" Like myself, they had subsisted on the shell-fish and the fruit before mentioned.

The remainder of my journey is briefly told. On the morning of the 16th we travelled on to Te Ruakaka, a village a few miles from the south shore of Wangarei Bay; where we were hospitably received, and made a hearty breakfast. Hence we crossed Wangarei Bay in a small canoe, running no little risk in so doing. Proceeding thence by the line of coast, we safely reached the Bay of Islands, on the 22nd of February; with, I dare hope, thankful hearts to our Heavenly Father for all his mercies.

I did not observe anything new in Botany during these few last days; in fact, I did not particularly look after anything, for I had often gone over the ground to Wangarei; and I much wished to reach the Bay of Islands, with the least delay possible, in consequence of the disturbed state of that district.

Thus, my dear Sir William, I have endeavoured to give you a faithful outline of my rambling journey. And although I have extended this present communication, written by snatches, to a much greater length than was originally contemplated, it will after all, I fear, be considered very deficient in point of satisfactory information.

I have also, I confess, great reason to apprehend that many of the specimens, fondly cherished by me as new, may after all be well known to you; notwithstanding I hope to be forgiven for thus presuming too much, in this my novitiate; when you kindly consider my situation, here at the antipodes, not only without, but far away from, books of reference. My errors of conjecture, too, in venturing an opinion as to what genus certain unknown plants may belong, I trust, for the same assignable reason, will also be charitably construed. Making then every fair deduction, I think there are still grounds for hoping that a portion of these plants will prove quite new to science.

In conclusion, my dear Sir William, wishing you the same amount of pleasure in looking over, as I had in gathering and putting up for you, the specimens now sent,

Allow me once more to subscribe myself,
Very sincerely and faithfully yours,
WILLIAM COLENSO.

Notes on the Specific Characters and Varieties of some British Plants. By HEWETT C. WATSON, ESQ.

(*Continued from page* 623.)

The following notes will refer to the characters and specific distinction of several plants as they exist in nature, or are given in the two most recent works which describe the plants of Britain; namely, the fifth edition of the British Flora, by Sir W. J. Hooker, and the Manual of British Botany, by Mr. C. C. Babington. We are informed by their respective authors, and almost in the same terms, that these two works have been founded upon "an examination of the plants themselves;" and no doubt such is the fact. Yet in many instances the two Floras do not at all correspond, either as relates to the distinction in species and varieties, or as regards the characters used for specific discrimination. The existence of these differences clearly proves that there is still something to be ascertained and settled; still something to be learned by direct inquiry from nature. Lately, indeed, much has been said about the necessity of consulting more frequently the works of continental botanists, as if that were the one essential course for constructing a Flora of Britain. If the question were one respecting accuracy and uniformity of nomenclature, the propriety of such consultation would be evident enough; but there appears little occasion to consult continental works when the matter before us is simply a question, whether the species of British plants are correctly distinguished and described in the works of British Botanists. Here the appeal must be to nature's own works in the form of living plants or dried specimens. Accordingly, I do not go out of my way to ascertain whether the views of this or that continental botanist may chance to correspond more closely with those set forth in the British Flora, or with those which appear in the Manual of British Botany. My object here is simply to put on record certain facts observed in the plants of Britain, which more or less disagree with the printed characters assigned to them in books, and particularly those facts which bear upon the distinctions of the more dubious species. If, in doing so, I am unavoidably led to express dissent from the views of species adopted in the Manual, I would still bear my feeble testimony to the care and accuracy with which the characters of species are usually given in that work. Possibly, indeed, the endeavour to make strong distinctions on paper has in some instances frustrated the ultimate object of such distinctions, by leading the author to describe only the more decided forms, and to neglect those intermediate links which another observer may regard as proofs of specific identity, where the author wishes to establish specific distinctness. Besides, it is far easier to create than to destroy a mere book species, however false in nature. A good observer may readily seize upon one or more differences between individual plants, may put these differences into the form of a specific character, and may give a new name to one or both of these paper species. The name will live in books, at least for his time, on account of the trouble of disproving the pretended species. A new species may be made out of a single specimen, and often has been thus made. To disprove a false species, is a more tedious process. It may be necessary to seek and examine many intermediate forms, to study the plant at different stages of growth, to see it under different circumstances of soil or situation, to raise it afresh from seeds, &c. &c. And if done, all this cannot be told briefly like a specific character.

Fumaria officinalis (Linn.) and *F. capreolata* (Linn.)—In both these species, as likewise in *F. micrantha* (Lag.), the stem is either erect or spreading, or climbing by its cirrhose petioles. In both, also, the sepals vary in size; in *F. capreolata*, ranging from one-third to two-thirds the length of the corolla; in *F. officinalis*, from one-fourth to one-half. My most puzzling English specimen can be referred to *F. officinalis* only dubiously, on account of the absence of grown fruit. It has bracts equalling or exceeding the pedicels, and sepals about two-thirds the length of the corolla, but so narrow as to look almost like the bracts. The figure of *F. Gasparinii* (Bab.) in the Trans. Bot. Soc. Edinburgh, vol. 1, page 36, (which represents a Sicilian specimen) might pass for a figure of this English specimen, which was found by the towing path of the Thames near Hampton Court. After plucking a branch from the solitary plant found there, I left the rest for seed; but it was unfortunately destroyed a few days after by the grazing of some animal. Different as these two species are in their extreme states, intermediate forms exist which can scarce be referred to either with any certainty; and if *F. media* (DC.) be taken as a name for those intermediate forms, it becomes difficult to distinguish this last from the other two species.

Barbarea præcox (Br.)—In my own specimens, as also in the figure of English Botany, the terminal lobe of the lower leaves is much broader than the rest. It would hence appear that there is an inconstancy or inaccuracy in the character of "lower leaves lyrate: upper pair of lobes as broad as the roundish subcordate terminal lobe." (Manual, 20.)

Viola lactea (Sm.) and *V. flavicornis* (Sm.)—These are assuredly undistinguishable as species, so gradually do they pass into each other. Both are collected in the same localities, as Yarmouth Denes and Bottisham Fen. To *V. flavicornis* I refer my Peebles specimen received from Mr. Maughan, who is the authority for *V. lactea* in that locality, as mentioned in the Flora Scotica. It should be observed, however, that the name of *V. flavicornis* is applied differently by English botanists. Mr. Babington cites this species of Smith under his variety "*pusilla,*" which he describes with "leaves roundish-cordate rather acute" (Manual, page 34.) Smith's own words in the English Flora say, "heart-shaped obtuse;" and the specimens in his herbarium correspond with the description of the plant in English Flora. The figures in English Botany represent only a common dwarf state of *V. canina,* and these have probably misled Mr. Babington. Three principal forms may be recognized among British specimens, namely; 1. *V. canina*, with cordate leaves—2. *V. flavicornis*, with cordate-ovate leaves—3. *V. lactea*, with ovate-lanceolate leaves. The two latter are usually very small in a wild state, but they expand much under cultivation and approach nearer to the first. Even in a wild state, the three forms are closely connected by transition links which forbid specific distinction.

Polygala vulgaris (Linn.) and *P. calcarea* (Schultz.)—The latter is contrasted against the former by three characters; namely, "lower leaves larger"—"wings of the calyx not mucronate"—"lateral nerves distinct from the central nerve at the apex." In my Kentish specimens of *P. calcarea*, collected by the late Mr. W. Christy, the intermediate leaves are larger than those above and below them; and the same character occurs in some specimens of *P. vulgaris*. In those specimens of *P. calcarea* the wings are sometimes mucronate. In both species the lateral nerves remain distinct or anastomose variously at their extremities. The apex of the central nerve is distinct in both alleged species. Where is the specific character to distinguish them? Is the Kentish plant truly the same as the continental *P. calcarea?*

Cerastium atrovirens (Bab.) and *C. pedunculatum* (Bab.)—It is curious that the second of these alleged species should be passed unnoticed, even as a variety, in the Manual. I think it fair to point out the omission, as an implied admission that at least one newly made species in this genus has been founded on insufficient characters. Mr. Borrer's remark probably points out the true place of *C. atrovirens*, which I take to be nearly synonymous with *C. tetrandrum* of most English botanists; but embracing also some specimens which would be referred to *C. semidecandrum* by myself and others. I know this to be the case, because Mr. Babington kindly looked over the specimens bearing these two latter names in my own herbarium, and pointed out some (under each name) which would belong to his *C. atrovirens*. We are told that *C. semidecandrum* may be distinguished by its half-membranous bracts. I doubt the validity of this character, as an invariable distinction, because I find plants growing intermixed, and otherwise closely alike, though some have herbaceous bracts, while others have them half-membranous. Moreover, in other species of this genus the proportion of membrane in the bracts and sepals is very variable. Excluding *C. pedunculatum*, the Manual has four species where the British Flora has two only; namely, *C. semidecandrum* and *C. tetrandrum.* I must confess a decided preference for the views of the British Flora here, though without feeling quite satisfied that even these two are permanently distinct in nature. At the same time, it is not without some hesitation that I thus venture to oppose the opinion of a superior botanist who has closely studied the species of this difficult genus.

Cerastium alpinum (Linn.) and *C. latifolium* (Linn.) In his Catalogue of Pyrenean Plants, Mr. Bentham reduced the *C. latifolium* of English authors to a variety of *C. alpinum*, under the name of "*piloso-pubescens*." The same view is repeated in the Phytologist (page 497) by Mr. Edmonston, a young Shetland botanist, who finds a plant in the Shetland Isles which he supposes to be the true *C. latifolium* of Linnæus, and distinct from the Highland plant so named in the British Flora. These opinions are adopted in the Manual. I am sorry here again to find myself in opposition to the acute author of the latter work. Of three specimens in the Linnæan herbarium, labelled *C. latifolium* in the handwriting of Linnæus, two appear to my eyes undoubtedly the same as the plants of Ben Lawers and other Highland mountains. In the Phytologist (Part 2, page 586 and Part 3, page 717) my reasons for rejecting the views of Mr. Edmonston are given more fully; but I may here add a caution, that the characters assigned by myself to the seeds will require verification; a suspicion having arisen that the names of the two species had been accidentally transferred on the packets of seeds. If this error occurred, the character of rough (almost muricate) seeds will belong to *C. alpinum,* not to *C. latifolium.*

Hypericum dubium (Leers) and *H. maculatum* (Crantz.) I cannot see the differences which are found by Mr. Babington between the plants of Arran (*H. dubium*) and those of other localities (*H. maculatum*). Most of my British specimens have characters intermediate between those given for the two alleged species. The sepals of other species of *Hypericum* vary much. I have repeatedly seen late flowers of *H. perforatum* with broad and obtuse (sometimes almost foliaceous) sepals, though the persistent sepals of the earlier flowers were narrow and acute, as usual with that species.

Lotus corniculatus (Linn.) and *L. major* (Scop).—I cannot shew sufficient reasons for uniting these alleged species; but may state that one character used for distinction is certainly fallacious; namely, that founded on the position of the beak of the pod, which is said to spring from the "upper suture of the pod" in *L. major*, and from the "middle of the end of the pod" in *L. corniculatus*. As a question of structural anatomy, I apprehend the beak to be a continuation of both sutures, though possibly connected more with the upper (stronger) suture. The apparent position is hardly more than a condition of age; though if any difference can be found, it is in the pod of *L. corniculatus* that the beak is more completely a continuation of the upper suture. In the very young pod of this species, the beak is rather nearer the lower suture. Afterwards it appears at "the middle of the end of the pod," between the two sutures. A sinus or contraction is then formed at the base of the beak, on the side towards the lower suture. This sinus increases with the growth of the pod, until the beak at length seems a direct continuation from the upper suture, more or less bent towards the lower suture.

Lotus angustissimus (Linn.) and *L. hispidus* (Desf.)—Seeds of the former, sown in my garden, produced only the same form; while seeds of the latter produced both forms. The seeds were brought from the Azores; but it is possible that some accidental intermixture occurred, as they were not collected with the intention of trying the experiment. By *L. hispidus* I understand the form with short pods; the references in the British Flora having been misplaced by some error of the pen or press. I do not find the character of "rugose terete" pod more applicable to *L. hispidus*, than to *L. angustissimus*; and the length of the pod is very variable when measured by that of the calyx. I wish some other botanist would raise our native species of *Lotus* from seeds. *L. tenuis* has thrice come up true from seed in my garden.

Alchemilla conjuncta (Bab.)—I have not seen wild native specimens of this. For several years the garden plant has kept its peculiarities, both in stiff loam and light vegetable mould, in the open ground and confined in a pot. The seedling plants also come up like the parent. The late Mr. J. E. Bowman wrote me that the plant brought by himself from "Gatesgarth dale" was *A. alpina*, which remained many years unchanged in his garden.

Tormentilla reptans (Linn.)—This is probably an example of a third species made up by uniting forms of two other species; namely, a tetrapetalous form of *Potentilla reptans* united with a petiolate-leaved form of *Tormentilla officinalis*. We cannot otherwise account for its union with the latter by Mr. Babington, while Mr. Wilson finds it "undistinguishable" from the former. Indeed, I have had specimens of each sent to me under the name of *Tormentilla reptans*. My own observations on the plants lead me to concur with Mr. Babington's view; namely, uniting *T. officinalis* and *T. reptans*.

Prunus Cerasus (Linn.) and *P. avium* (Linn.)—The analogy of *Pyrus Malus* (Crab and Apple) suggests the specific identity of these Cherries. What appears to be the original stock of *Pyrus Malus*, is a small and austere-fruited shrub, with thorny spurs and nearly round and glabrous leaves. Besides this, our hedges hold several varieties that approach more or less to the apple, in their more arborescent growth, and their ovate and downy leaves. The wild trees of *P. avium* are probably often the descendants of the garden cherry-tree, whose stones are so abundantly swallowed and again disgorged by thrushes and other birds.

Fragaria Vesca (Linn.)—"The close-pressed hairs of the flower-stalks become gradually more and more spread out as the fruit ripens." (J. E. Bowman, MSS.)

Epilobium angustifolium (Linn.)—The long-fruited form, the *E. macrocarpum* of Stephens, is the Linnean type of the species, and far the most common in Britain. The variety called *E. brachycarpum* by Leighton, is the garden form, and rare in a wild state. They pass into each other by intermediate forms. I have seen the long and short fruit on the same plant, though probably this is a rare coincidence.

Epilobium alpinum (Linn.) and *E. alsinifolium* (Vill.)—In the Manual, the stoloniferous "root" of the former is contrasted against the stoloniferous "stem" of the latter. But *E. alpinum* certainly throws out rooting branches or shoots from the base of the stem, both above and below the surface of the ground. From their mode of growth, the stems are often much buried in mud or moss; and it is by no means easy in such cases to say which is root and which is stem. Their affinity is more with *E. tetragonum* than with *E. montanum*; and mountain specimens of the former have sometimes been named *E. alsinifolium*, by botanists familiar enough with the plants. Even in Surrey, I have gathered specimens of *E. tetragonum* which resembled *E. alpinum* in bearing a solitary and drooping bud at the end of a very short stem.

Callitriche pedunculata, var. *terrestris*.—This variety is correctly placed in the last edition of the British Flora. I cannot have expressed my meaning clearly, or Mr. Babington would not have referred it to *C. platycarpa*. If I really know this latter plant, it appears scarce distinct from *C. verna*. The locality of "ditches near London" probably belongs to *C. pedunculata*, which has so frequently been mistaken for *C. autumnalis*.

Œnanthe pimpinelloides (Linn. ?) and *Œ. peucedanifolia* (Poll.)—Mr. Babington asks whether there is not a third species in Britain, in addition to these two? On the contrary, I venture to ask whether these two are fairly established? If distinct, they are ill described. Their specific distinctions are taken from the presence or absence of a general involucrum—the broad or narrow leaflets of the radical leaves—and the form of the root. In the Manual, the former species is described with a "general involucrum of many leaves, sometimes wanting," and my specimens shew both states. This negatives the value of the first character. With regard to the second, it is to be observed, that the specimens of *Œ. peucedanifolia* in Smith's herbarium, as also the figure in English Botany, are without radical leaves. And the state of my specimens leads to the surmise that *Œ. pimpinelloides* loses its true radical leaves early when growing luxuriantly in watery situations, and then appears to produce only leaves with narrow leaflets. Thirdly, I suspect the roots to have been imperfectly understood by English authors. In *Œ. pimpinelloides* the stem dies away after the seed has ripened. Young plants grow up around its base, in the form of suckers. The roots of these young plants at first consist of a cluster of filiform fibres. When the plants are more advanced in growth we find fibres which have thickened much for a part of their length, so as to form one elliptical or fusiform tubercle on each fibre. The upper portion of the fibre above the tubercle usually remains thin, and forms a peduncle by which the tubercle is attached to the base of the stem. The peduncles vary in length on the same plant. If nearly obliterated (by the tubercle forming near the base of the growing stem, or being much elongated) we may have a root such as is represented in the figure of *Œ. peucedanifolia* of English Botany, plate 348. If the tubercle is very short, and far down the fibre, we have the root of *Œ. pimpinelloides*, which is but partially represented in English Botany, (Plate 347) the peduncles only being there figured. Though I have seen sessile and shortly pedunculated tubercles on the same plant (of *Œ. pimpinelloides?*) I have never noticed any root with a cluster of tubercles so very close to the base of the stem as represented in English Botany, 348. The "root of slender elongate-clavate tapering fleshy tubercles" (Manual) probably refers to a middle period of development, before the tubercles are fully formed; while the words "root of elliptical-oblong" tubercles would apply to a more advanced stage. There is, however, a decided difference in the fruit of these plants; it being almost cylindrical in some specimens, and obovate or turbinate in others: though this distinction seems quite unconnected with the presence or absence of an involucrum. Nor, so far as my specimens go, am I able to connect it with any constant form of root or of root-leaves.

Helosciadium nodiflorum (Koch) and *H. repens* (Koch).—It is so easy to find intermediate specimens, in which the characters assigned to these alleged species are variously crossed and combined, that there appears no good reason for keeping them distinct. In *H. nodiflorum* the umbel is rarely or never quite sessile, often on a peduncle of an inch long. The obtusely and subsequently serrate leaves occur both on the procumbent and on the creeping stems.

Eryngium campestre (Linn.)—As there appears some danger of this plant being "split" into two book species, founded on slight differences in its radical and involucral leaves, it may be well to record the fact, that in my Devon specimen, equally as in a specimen from Jarrow, there are both simple and spinous involucral leaves on the same plant. I have the radical leaves only from Jarrow: they are rather bipinnatifid than three-lobed, though something of an intermediate character.

Tragopogon pratensis (Linn.) and *T. minor* (Fries.)—Their relative length of florets and involucrum is variable; and since there appears to be no other clear distinction between these plants, it is difficult to understand why they should be described as two species. To be consistent, they should rather be made into three than two species, according as the involucrum is longer, shorter, or equal to the florets.

Thrincia hirta (DC.)—The variety "*dubia*" is said to be distinguished by its "leaves almost or quite entire very hairy, stalks hairy particularly below, involucral scales hairy;" and it is considered "probably a distinct species." I cannot think this at all probable. In *T. hirta* the lower part of the flower-stalk is usually hairy, and frequently the hairs are found the whole length of the stalk. The involucrum varies in all degrees from glabrous to very hairy. There is no regular correspondence between the hairiness of the flower-stalk or involucrum and the marginal divisions of the leaves. Entire, toothed, or deeply sinuate leaves may all in turn be found in connexion with glabrous or with hairy involucral scales. The plants with very hairy involucres (by no means rare) are occasionally mistaken for *Apargia hispida.*

Apargia autumnalis (Willd.)—In a ploughed field at Dalwhinnie I found a plant of this species with branched scapes bearing involucres densely covered with pale green (not blackish) shaggy hairs.

Hieracium alpinum (Linn.) and *H. murorum* (Linn.)—In the Phytologist for December last, page 801, I have made some remarks on the various names given to plants supposed to be varieties of these two. The number of cauline leaves varies greatly, and is ordinarily increased by cultivation in gardens where the plants have free space and good soil. The form of the leaves also varies considerably, and their margins are either entire, toothed, sinuate, or (in forms probably belonging to *H. murorum*) so deeply cut as to be almost called pinnatifid. I would suggest the following arrangement:—1. *H. alpinum* (Linn.), including *H. Halleri.* —2. *H. nigrescens* (Willd.) which is so intermediate between 1 and 3 as to make its junction with either a matter of doubt. By English botanists it is usually labelled "*H. alpinum*" or "*H. Halleri*" but in Smith's herbarium there are specimens labelled "*H. pulmonarium ?*" which seem really to be only this species in a luxuriant state through cultivation.—3. *H. murorum* (Linn.), which includes *H. Lawsoni, H. pulmonarium*, and *H. maculatum*: all of English

Botany.—4. *H. sylvaticum* (Smith.) I am by no means satisfied that the three last are distinct species. It is usual to refer Smith's *H. maculatum* to his *H. sylvaticum*; but I consider the wild plant, with the numerous dark marks on its leaves, to be a form of *H. murorum*; the figure in English Botany (2121) apparently representing a cultivated specimen with the form and number of leaves altered, as usual in garden plants of *H. murorum.*

Crepis biennis (Linn.)—The chalk plants of the South of England appear to be the *Borkhausia taraxacifolia.* The Rev. A. Bloxam finds the *Crepis biennis* in plenty near Twycross in Leicestershire. It has a slender leafy stem, two or three feet high, and branched only near the top. The pappus is quite sessile.

Senecio tenuifolius (Jacq.)—Leaves pinnatifid or bipinnatifid: the more divided leaves belonging especially to my North of England specimens (Newcastle and Richmond), in which also the leaves are less cottony.

Gnaphalium supinum (Linn.) and *G. pusillum* (Haenke.)—These are said to be distinguished by the cæspitose growth and distant heads of the latter, contrasted against the "not cæspitose" growth and the "heads aggregate terminal in a capitate spike" of the former. The common plant of the Highland mountains is, therefore, *G. pusillum*; but I possess Clova specimens in which the cæspitose growth and aggregate heads are united on the same individual.

Centaurea Calcitrapa (Linn.)—Heads terminal. The plant begins to flower when only two or three inches high, and the head or flower then terminates the growing stem. One or more branches proceed from the stem below the terminal head, elongate beyond it, and again terminate in heads. Secondary branches succeed in the same way from below the heads which terminate the first branches; and so on successive branches are produced until the plant has attained to a large bush-like tuft. Something of the same kind may be observed in *Gnaphalium Germanicum* and *Nemophila insignis.*

Carduus pratensiis (Huds.) and *C. Forsteri* (Bab.)—The suckers or "creeping root" of the former readily distinguish it from the latter, in which the stems proceed from the centre of the tufted root year after year. The stem-leaves of *C. pratensis* are occasionally as much "pinnatifid" and prickly as those of *C. Forsteri*. The heads of the latter are not always two or three together.

Erythræa Centaurium (Pers.) and *E. pulchella* (Hook.)—These look the most distinct among our four alleged British species. Occasionally, however, among plants of *E. Centaurium* I find solitary individuals which assume the habit of *E. pulchella*, and in which the calyx is either equal to the tube of the opened corolla, or considerably shorter, even on the same single plant. In these specimens the leading shoot has probably been injured by cattle or insects at an early stage of growth.

Erica Tetralix (Linn.) and *E. Mackaii* (Hook.)—It is difficult to find characters which will keep these distinct in description. The included or protruded style, as I have before observed, is a condition of age, and shared by both. In one or two of my specimens of *E. Mackaii* the leaves are so revolute at the margin as to be quite linear; while I have seen many plants of *E. Tetralix*, in which the leaves were more broadly ovate than in the broadest leaved specimens of *E. Mackaii*. The glabrous upper surface of the leaves and midrib beneath occur in both. The sepals of *E. Mackaii* are not invariably glabrous. I have not yet found either sepals or germen glabrous in *E. Tetralix*. If these are not distinct species, the connecting links must be sought in the localities of *E. Mackaii*, which is the variation from the typical form of *E. Tetralix*, and which may consequently be expected to shade off into the true type.

Erica ciliaris (Linn.) var. *Watsoni*.—This is the name given in Decandolle's Prodromus to the hybrid plant from Truro, mentioned in page 208 of the British Flora. I should rather unite it with *E. Tetralix*, as having more the characters of the latter species, although the form of the corolla gives a first-sight resemblance to *E. ciliaris.*

Myosotis palustris (With.)—Pubescence spreading only on the lower parts of the stem and branches. It is worthy of note that there is still a spreading pubescence on the lower parts of those branches which spring from the middle part of the stem where the hairs are nearly erect or even appressed. On the upper part of the stem the pubescence is always appressed, as in *M. cæspitosa.*

Myosotis cæspitosa (Schultz.)—Limb of corolla variable in size ; in some plants equalling that of *M. sylvatica,* in others scarcely so large as that of *M. arvensis.* The teeth of the calyx, particularly when in fruit, are more ovate than lanceolate ; being almost equally broad as those of *M. palustris,* though the calyx of the latter is much less deeply divided. The characters of leaf-bearing and leaf-less racemes are occasionally interchanged between this species and *M. palustris.*

Myosotis collina (Hoffm.)—The pedicels are twice the length of the calyx in luxuriant specimens, which present the characters of *M. collina* in other respects.

Myosotis arvensis (Hoffm.)—The calyx, though closed when fresh, has invariably opened under pressure in the process of drying many specimens ; that is, so far as my own observation extends.

Veronica Buxbaumii (Ten.)—I have specimens from Berwickshire in my herbarium, yet the figure in the Flora of Berwick cannot be intended for this species, since it has the capsules of *V. polita.*

Veronica humifusa (Dickson.)—Introduced into my garden in 1841, this has grown to a large patch, far exceeding the largest plants of the common form of *V. serpyllifolia,* which comes up abundantly as a weed in the same garden ; yet, while the latter flowers freely, the former has not shewn a blossom. Neither will it flower when confined in a flower-pot.

Linaria vulgaris (Mœnch.)—Rachis and pedicels so frequently glabrous that the contrary condition ought certainly to be excluded from the specific character. I possess a specimen in which the leaves are whorled the whole length of the stem, as is frequently the case in *L. repens.*

Linaria Italica (Trev.)—I am not quite assured yet that the English plant is rightly thus named; but would fully concur in the opinion of its being a hybrid, intermediate between *L. repens* and *L. vulgaris.*

Mentha arvensis (Linn.)—Upper leaves usually much smaller. Occasionally the uppermost leaves are almost equally large with those below them, but in my neighbourhood this is certainly more the exception than the character.

Calamintha officinalis (Mœnch) and *C. Nepeta* (Pursh).—Both have fruit with impressed dots, though the dots may be more numerous and deeper on the fruit of *C. officinalis.* Is the fruit of *C. Nepeta* always smaller and paler? The leaves in both are either obtuse or subacute.

Lamium album (Linn.) and *L. maculatum* (Linn.)—Equally in both I find one slender tooth on the lateral lobes of the lower lip of the corolla, and cannot understand the character of "three teeth" ascribed to *L. album.* Have the angles produced by the revolute edge of the lobes of the lip been mistaken for teeth? They exist, however, in both. Perhaps, in both also, the broadest sinus occurs between the two lowest teeth of the calyx. The appearance of separation between the upper tooth and the rest in *L. album,* is rather induced by a lateral compression of the calyx, than by any actual distance. In *L. maculatum,* the teeth of the calyx are more reflexed and the stem is less hairy than in *L. album.* The leaves of the latter are frequently spotted with numerous small white marks.

Primula elatior (Jacq.)—There appear to be four plants which pass under this name in England. First, a form of *P. vulgaris,* in which the umbel is elevated on a common stalk, instead of remaining sessile among the leaves. Secondly, another form of *P. vulgaris,* in which the flowers are smaller and deeper-coloured, and grow in a many-flowered umbel on a stout scape. I take this to be a hybrid between

P. vulgaris and *P. veris*, and it usually (if not always) is found in company with both the supposed parents, in damp ground. Thirdly, there is a large-flowered cowslip (*P. veris*) in which the limb is broader and less concave than usual; and this also may be a hybrid. Fourthly, there is the true *Primula elatior* (as it appears to be) discovered at Bardfield in Essex, by Mr. Doubleday. In this latter, the calyx is sometimes only half the length of the tube of the corolla, and has short triangular teeth.

Chenopodium glaucum (Linn.)—In my Surrey specimens, the small heads or clusters of flowers are disposed into interrupted leafy (not leafless) spikes. The figure in English Botany, though with less leafy spikes, represents an early stage. The Darlington plant has ovate obtuse leaves, and the flowers in short almost leafless spikes.

Atriplex patula (Linn.)—Various species have been formed out of this, in accordance with variations in the cutting of the leaves and perianth of the fruit; but assuredly these vary much on the same single individual. I have seen the perianth entire at the margin and on the back; toothed with few or several teeth at the margin, and muricate with few or several teeth on the back: all on the same plant.

Polygonum maritimum (Linn.) and *P. Roberti* (Lois. ?)—The latter of these, having been long joined or confounded with *P. aviculare*, it will probably excite surprise that I should here propose to reduce the plant to a variety of *P. maritimum*. One of my specimens of *P. Roberti*, from Galloway, has the nerves of the ochreæ branched, and in general appearance is about half-way between the Christchurch plant, called *P. maritimum*, and the Penzance one admitted to be *P. Roberti* of the British Flora. Moreover, living specimens in my garden, raised from seeds of the true *P. maritinum* (Azores), are half-way between the parent plants and the Cornish *P. Roberti*, having the long internodes and straggling habit of the latter, with the broader leaves and more nerved ochreæ of the former. Lastly, the varieties of *P.*

aviculare are as different from one another, as are any forms of these two.

Polygonum aviculare (Linn.)—Fruit frequently longer than the perianth, more particularly in a long straggling variety which has much the habit of the sea-side specimens of *P. Roberti*, but still with the striated fruit and other characters of *P. aviculare*.

Rumex sanguineus (Linn.) and *R. conglomeratus* (Murr.)—It appears to my eyes that some plants are so intermediate between these two alleged species, as to render their proper name and place doubtful. The tubercles occur on one, two, or all the enlarged petals; the whorls are all leafless, or leafy below and leafless above, or leafy throughout.

Betula alba (Linn.) and *B. glutinosa* (Fries.)—Assuredly the specific characters assigned for these alleged species, in the Manual, will not suffice to distinguish them. I find the form of the fruit, and the relative length of its membranous margin, both varying, without any correspondence with the variations in the form of the leaves. I have also seen cordate, ovate, and deltoid leaves on the very same tree. In my former paper, in the London Journal of Botany, page 619, and more at length in the Phytologist, page 817, I have explained that the form of the leaves varies with age and luxuriance, and cannot be taken for specific characters in nature, though in small sprigs for the herbarium these characters may seem clear and strong enough.

Juncus compressus (Jacq.) and *J. cœnosus* (Bich.).—No certain distinction in the length of the mucro of the capsule. It varies, but the shorter-capsuled shore plant sometimes has the mucro quite as long as that of the longer-capsuled freshwater plant.

Luzula Forsteri (DC.)—Peduncles of the fruit drooping, not "erect;" although by no means reflexed as are those of *L. pilosa*.

Alopecurus geniculatus (Linn.) and *A. fulvus* (Sm.)—The difference between these two species, in the relative length and breadth of their anthers, is much exaggerated in English Botany.

Festuca loliacea (Huds.) and *F. pratensis* (Huds.)—Certainly these are only forms of a single species. They pass into each other by the most complete gradation of intermediate forms, and the spiked and panicled (branched) racemes may be seen on the very same root.

Festuca elatior (Linn.)—I suspect that we have a sea-side plant distinct from *F. pratensis* and *loliacea*, and which is probably the *F. arundinacea* of Schreber. It is known by its large rough leaves, tall stems, and the spreading or drooping position of the peduncles when in fruit. In *F. pratensis* the branches of the panicle are nearly erect in fruit.

Avena pratensis (Linn.) and *A. alpina* (Smith).—Apparently these two have the same relation to each other as have *Festuca loliacea* and *F. pratensis*. *Avena alpina* is that form of *A. pratensis* in which the peduncles of the spikelets are more branched than usual; the spiked raceme of the latter being thus converted into a panicled raceme. I have seen various specimens from the hills of England and Scotland, to which either name might be given with about equal correctness.

Bromus commutatus (Schrader).—In 1841 I gathered seeds from the wild plants in Surrey, and sowed them in my garden. Being absent in 1842, I did not see the plants so raised in flower; but their seeds falling in that summer produced other plants which flowered in 1843. Among these last, several had the spikelets pubescent, like those of *B. mollis*, while others retained the glabrous spikelets of the wild state. There was no other appreciable difference between the two varieties; but the fact shows how little trust can be given to the presence or absence of pubescence on the flowers in this genus. *Bromus racemosus* is certainly a subglabrous form of *B. mollis*; while *Bromus velutinus* is the pubescent form of *B. secalinus*. It is to be remembered, however, that the name of *B. racemosus* is sometimes applied by botanists to immature specimens of *B. commutatus*; also that the name *Bromus velutinus* is in turn given to a form of *B. mollis*, in which the peduncles are short and the panicle consequently very close. In reference to these plants I cannot help expressing a hope that English botanists will discountenance the change of a generic name so long and almost universally adopted as that of *Bromus*. Why should it be exchanged into that of *Serrafalcus?*

Lolium multiflorum (Lam.)—The "Italian Rye-grass" is now much sown by farmers in preference to the native *L. perenne*; and the fact of its coming so true from imported seeds, in this country, shows it to be a persistent variety. I do not call it a species, because there appears to be no certain character for distinction. Our native *L. perenne* acquires awns in some places, though not commonly found in that condition. Where it grows in rich ground, with free space for roots and leaves, the spikelets of *L. perenne* bear as many flowers as do those of the *L. multiflorum*. On the other side, *L. multiflorum* is certainly perennial, and produces "barren shoots," that is, leafy shoots, which do not become flowering stems till the succeeding year. And on removing a plant from a field of the "Italian Rye-grass," after it had flowered there, and confining it to a small flower-pot, later flowering stems were produced, which bore spikelets of four to six almost awnless flowers.

Spartina stricta (Roth) and *S. alterniflora* (Loisel.)—These appear very different, yet there is a slight shading off in the characters assigned for distinction in the few dried specimens which only I have seen. I have a specimen of *S. alterniflora*, in which the leaves are considerably short of the top of the spikes; and in a specimen of the same species, for which I am indebted to Dr. Bromfield, the outer glume is not quite glabrous, though the hairs on it are few and short. So far, there is an approximation to the characters of *S. stricta* in these two specimens.

Notes on MIMOSEÆ, *with a Synopsis of Species. By* GEORGE BENTHAM, ESQ.

Tribe III. ACACIEÆ.

(Continued from vol. i. p. 528.)

XXI. LYSILOMA.

Calyx campanulatus, 5-dentatus. Corolla subinfundibuliformi-campanulata, 5-fida, laciniis membranaceis. Stamina indefinita (sæpius infra 30) corolla vix triplo longiora, basi in tubum a corolla liberum coalita. Ovarium sessile v. breviter stipitatum. Legumen (in L. *stipulari* et L. *rostrata*) lineare, rectum v. vix falcatum, plano-compressum margine incrassato integro a valvulis submembranaceis maturitate soluto.—Frutices v. arbores in America calidiore crescentes, habitu *Acaciis* similes, inermes. Stipulæ sæpius foliaceæ v. membranaceæ. Folia bipinnata, pinnis foliisque plurijugis. Glandula petiolaris elevata, jugales paucæ. Pedunculi axillares, nunc solitarii v. fasciculati, nunc in ramos racemose oligocephalos aphyllos abeuntes. Flores sæpius numerosi, parvi, sessiles, staminibus rarius semi-pollice longioribus.

The species I have collected under this generic name are evidently closely allied to each other, although there can be no certainty of their being truly congeners until the fruit of more species shall be known. The generic character lies in the combination of the pod of a *Mimosa* with the monadelphous stamens of the *Ingoid* genera. The calyx and corolla are those of several *Acacias*, the stamens longer than in most species of that genus, and apparently not yellow, but shorter and fewer than is usual in *Calliandra*. Some species very much resemble *Leucæna* in habit, and the form of the pod of L. *Schiedeana* is the same, though the dehiscence is very different.

* *Floribus globoso-capitatis.*

1. L. *Bahamensis* (sp. n.), glabra v. vix pilosula, stipulis amplis falcato-ovatis acutis dimidiatis, pinnis 2-4-jugis, foliolis 10-20-jugis oblique ovatis oblongisve glabris.—Ramuli

folia et inflorescentia siccitate nigrescunt. Stipulæ semipollicares, foliaceæ, nervo excentrico percursæ. Petioli crassiusculi, communes 2-3 poll., partiales jugi infimi circa 2 poll., jugi ultimi sæpe 3-3½ poll. longi. Folia 3-6 lin. longa, obtusa v. rarius acutiuscula. Pedunculi fasciculati, axillares, v. fasciculis rarius breviter racemosis. Bracteæ versus apicem pedunculi 1-3, parvæ, heteromorphæ, sæpe deficientes. Capitula densa, staminibus neglectis 4-lin. diametro. Stamina circa 20, vix semipollicaria. Ovarium sessile, glabrum. Legumen non vidi.—Bahamas, *Swainson.*

2. L. *Schiedeana*, glabra v. ramulis petiolisque minute puberulis, stipulis amplis semicordatis membranaceis, pinnis 6-8-jugis, foliolis multijugis linearibus glabris.—*Acaciæ* sp. VI. Schlecht. Linnæa 12. p. 573 (fide specimine sterili folioso).—Stipulæ 3-6 lin. longæ. Petioli communes 3-5-pollicares, partiales subbipollicares. Foliola 20-30-juga, obtusiuscula, 2-3 lin. longa, subglaucescentia. Pedunculi nunc solitarii monocephali, nunc in ramos 2-3-cephalos bracteatos abeuntes. Capitula magnitudine præcedentis. Stamina 15-20, corolla subtriplo longiora, basi in tubum connata corolla vix breviorem. Legumen (nondum maturum) 5-pollicare, 8-9 lin. latum, stipitatum, apice longiuscule cuspidatum.—Central America, *Sinclair ;* Hacienda de la Laguna in Mexico, *Schiede.*

3. L. *aurita*, ramulis petiolis pedunculisque tomentosulis, stipulis amplis semicordatis longe acuminatis membranaceis, pinnis 20-25-jugis, foliolis multijugis linearibus ciliatis.—Legumen ignotum.—*Acacia aurita*, Schlecht. Linnæa, 12, p. 572.—Mexico, *Schiede.*

4. L. *microphylla* pubescens, stipulis lanceolatis acuminatis pubescentibus, pinnis 5-8-jugis, foliolis multijugis parvis subtus puberulis.—Legumen ignotum.—*Acacia arborea*, Benth. Pl. Hartw. p. 13, non Willd.—Mexico, *Hartweg*, n. 72.

* *Floribus cylindraceo-spicatis.*

5. L. *Acapulcensis*, ramulis junioribus petiolisque pilosulis, stipulis obsoletis, petioli glandulis depressis, pinnis sub-9-

jugis, foliolis multijugis oblongo-linearibus glabris.—*Acacia Acapulcensis* Kunth. Mim. p. 78, t. 24. Legumen ignotum. Species a me non visa.—Acapulco, *Humboldt and Bonpland.*

6. L. *desmostachya*, ramulis petiolisque velutino-pubescentibus, stipulis obsoletis, petioli glandulis elevato-conicis, pinnis 7-12-jugis, foliolis multijugis oblongo-linearibus adpresse pilosulis.—*Acacia desmostachya,* Benth. Pl. Hartw. p. 13.—Stamina circa 30. Legumen ignotum.—Leon in Mexico, *Hartweg,* n. 75.

7. L. *rostrata,* scandens, glabra, stipulis obsoletis? petioli glandula cupuliformi, pinnis 6-8-jugis, foliolis multijugis oblongo-linearibus acutis.—Legumen 2½-3 poll. longum, 5 lin. latum, breviter rostratum. Flores ignoti, sed staminum vestigia circa leguminis basin numerosa.—*Acacia rostrata,* Humb. et Bonpl. in Willd. Spec. 4, p. 1060. *Mimosa ignava,* Humb. et Kunth. Nov. Gen. et Sp. 6, p. 259. Species a me non visa.—On the Magdalena river.

Mimosa nigricans, Vahl. Ecl. 3, p. 37. t. 29, and M. *divaricata,* Jacq. Hort. Schœnb. 3, p. 76, t. 395 are probably also a species of *Lysiloma.*

XXII. ALBIZZIA (*Durazzini.*)*

Flores plerique hermaphroditi. Calyx campanulatus v. tubulosus 5-dentatus. Corolla infundibuliformis. Stamina indefinita, sæpius numerosa, basi in tubum monadelpha. Legumen planum siccum, membranaceum v. chartaceum, tenuiter marginatum, indehiscens v. in valvulas membranaceas nec elastice nec contortim dehiscens. Semina funiculo filiformi appensa.—Arbores v. frutices inermes, Africæ, Asiæ v. Australasiæ incolæ. Folia bipinnata. Glandulæ petiolares jugalesque *Acaciarum* in omnibus speciebus plus

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* I know not where the genus was first published by Durazzini. It has been taken up by Boivin in an article in the *Encyclopédie du XIXe Siècle,* vol. ii. p. 32; a work which I have never seen, but from whence M. Decaisne kindly copied the article in question, and transmitted it to me. As I had previously completed the manuscript of the greater part of the genus under the name of *Serianthes,* some of the species occur under that name in some collections which I have had before me.

minus conspicuæ. Stipulæ nonnunquam membranaceæ, sæpius setaceæ v. obsoletæ. Pedunculi axillares v. racemosi non suprapositi. Flores globoso-capitati v. spicati, sæpius speciosi, staminibus longis albidis roseis v. rarius purpurascentibus comosi. Flores 1-3 centrales nonnunquam difformes corolla elongato-tubulosa, staminum tubo longe exserto.

This genus in the old world corresponds in some measure to *Calliandra* in the new world. The species have most of them been referred to *Acacia* on account of the pod, which is precisely that of some species of that genus, but the flowers are nearer to those of *Inga*, under which name a few species have also been published. When the specimens are perfect *Albizzia* is easily distinguished from *Acacia*, *Zygia*, and *Serianthes* by the flower, from all other *Ingoid* genera by the pod. Where the pod is wanting, it may be known from *Pithecolobium*, the only remaining *Ingoid* genus in the old world, in some cases by the large heads of flowers, the form of the corolla and long stamina; and the small-flowered species may be distinguished from the sections *Unguis-Cati* and *Concordia* by the want of spines, from *Clypearia* by the inflorescence. It is only in the case of the few species of the section *Cathormion* that there is any difficulty of deciding to which genus they belong without seeing the pod, but even here there are differences in habit which seldom leave much doubt.

§ 1. *Spicifloræ.* Pinnæ et foliola plurijuga. Spicæ cylindricæ. Species Australasicæ.

1. A. *fulgens*, subglabra, pinnis 2-3-jugis, foliolis 3-4-jugis ovali-v. oblongo-rhombeis basi longe angustatis subcoriaceis, glandula parva inter pinnas et foliola omnia, spicis laxiusculis elongatis, legumine bivalvi recto v. leviter falcato. —*Acacia fulgens* Labill. Sert. Austr. Caled. t. 67.—*Acacia cyclosperma*, DC. Prodr. 2, p. 456?—New Caledonia, *Labillardière.*

2. A. *granulosa*, ramulis petiolisque puberulis, pinnis 2-6-jugis, foliolis 10-14-jugis rhombeo-ovatis oblongisve basi

valde obliquis glabris, glandula infra pinnas infimas, jugalibus subnullis, spicis laxiusculis elongatis, legumine bivalvi subfalcato.—*Acacia granulosa*, Labill. Sert. Austr. Caled. t. 66.—New Caledonia, *Labillardière.*

3. A. *lophantha*, ramulis petiolis pedunculisque velutino-puberulis, glandula in medio petiolo, jugalibus paucis parvis, pinnis 8-10-jugis, foliolis multijugis linearibus obtusiusculis subtus sericeo-puberulis, spicis cylindricis, floribus pedicellatis, legumine bivalvi recto.—*Acacia lophantha*, Willd. DC. Prod. 2, p. 457. South West Australia; King George's Sound, *Bagster*; Geographer's Bay, *Fraser*; Swan River, *Drummond.*

§ 2. *Macrophyllæ.* Pinnæ unijugæ. Foliola paucijuga ampla (pluripollicaria). Capitula globosa.

4. A. *lucida*, glabra, stipulis deciduis, foliolis subbijugis ovali-oblongis acuminatis subæquilateris penninerviis supra nitidis, glandula in petiolo et sub foliolis supremis, pedunculis fasciculatis paniculatis, capitulis 6-10-floris, floribus sessilibus glabriusculis, calyce tubuloso corolla subquadruplo breviore, ovario breviter stipitato glabro.—*Mimosa lucida*, Roxb. Fl. Ind. 2, p. 544.—*Inga lucida*, Wall. Cat. Herb. Ind. n. 5267 excl. litt. B in toto et litt. F ex parte.—*Pithecolobio bigemino* habitu affinis, sed etiam florida primo intuitu distinguitur pedunculis non suprapositis. Foliola 2-3-pollicaria. Legumen 8-9 poll. longum, 15 lin. latum ei A. *Lebbek* simile.—Nipal, *Wallich*; Assam, *Herb. Hooker*; Melloon, *Wallich.*

5. A. *umbrosa*, glabra, stipulis parvis persistentibus rigidulis, foliolis uni-v. sesqui-jugis amplis ovali-oblongis acuminatis parum inæquilateris penninerviis supra nitidis, glandula inter pinnas et inter foliola, pedunculis axillaribus, capitulis paucifloris globosis, floribus sessilibus glabris, calyce campanulato corolla infundibuliformi-campanulata triplo breviore, ovario sessili glabro.—*Inga umbrosa*, Grah. in Wall. Cat. Herb. Ind. n. 5273.—Foliola 4-6-pollicaria v. interdum fere pedalia. Flores duplo fere majores quam in A. *lucida.*—Sillet, *Wallich.*

§ 3. *Obtusifoliæ.* Pinnæ plurijugæ (2-6-jugæ). Foliola plurijuga ovata v. oblonga (½-1½-pollicaria) obtusa, parum inæquilatera; nervo centrali v. parum excentrico. Stipulæ obsoletæ v. deciduæ. Capitula globosa.

6. A. *Lebbek*, ramulis foliisque glabris v. vix minute puberulis, pinnis 2-4-jugis, foliolis 5-9-jugis oblique ovali-oblongis obtusissimis inæquilateris subsessilibus, glandula magna prope basin petioli, jugalibus parvis pluribus rarius subnullis, pedunculis elongatis in axillis supremis fasciculatis subracemosis, capitulis amplis multifloris, floribus breviter pedicellatis glabris puberulisve, calyce corolla demidio breviore, ovario sessili glabro, legumine longissimo glabro.—*Acacia Lebbek*, Willd. DC. Prodr. 2, p. 466. *Acacia speciosa*, Willd. DC. Prodr. 2, p. 467. *Mimosa Sirissa*, Roxb. Fl. Ind. 2, p. 544. *Albizzia latifolia*, Boivin Encycl. XIX. Siecl. 2, p. 33.—Common in collections from tropical Asia and Africa, and often sent also from the West Indies, where it is, however, only cultivated.

β *pubescens*, ramulis foliis inflorescentiaque molliter pubescentibus.—Found with the smooth form in East India.

γ *parviflora*—*Acacia macrophylla*, Bunge Enum. Pl. Chin. p. 20.—Rocky mountains of Pan-shan in North China, *Bunge*.

The last mentioned variety does not appear to differ from the common form in anything but the small size of the flowers. Boivin, in placing this species in *Albizzia*, altered its specific name to *latifolia*, which I have not adopted as the old name of *Lebbek* is so well known, and there are other species with broader leaves.

7. A. *rhombifolia* (sp. n.), ramulis petiolisque puberulis, stipulis deciduis, pinnis 2-3-jugis, foliolis 3-6-jugis obovali-oblongis rhombeisve obtusis inæquilateris supra glabris subtus pilosulis, glandulis jugalibus ad pinnas et foliola omnia v. superiora, petiolari nulla, pedunculis fasciculatis subracemosis, capitulis multifloris, floribus pedicellatis glabris, calyce campanulato 5-fido corolla dimidio breviore, ovario subsessili piloso.—Folia fere *Zygiæ Brownei.* Flores omnino *Albizziæ.*—Senegambia, *Heudelot*, n. 735.

8. A. *glaberrima*, ramulis puberulis, pinnis 1-3-jugis, foliolis 3-5-jugis rhombeo-ovatis obliquis subacutis venosis glaberrimis, glandula in medio petiolo et inter foliola superiora, pedunculis axillaribus solitariis ternisve, capitulis multifloris, floribus pedicellatis glabris, calyce tubuloso campanulato 5-dentato corolla dimidio breviore. — *Mimosa glaberrima* Schum. Beskr. Pl. Guin. p. 321.—Guinea, where it is used as fuel, *Thonning*. I have not seen any specimens of this tree. I should, indeed, have referred the preceding A. *rhombifolia* to it, but that the name of *glaberrima* by no means agrees with it. It is, however, not improbable that the two may prove to be mere varieties of one species.

9. A. *ferruginea*, ramulis petiolisque ferrugineo-velutinis, stipulis inconspicuis, pinnis 2-5-jugis, foliolis 10-20-jugis oblongis obtusis utrinque molliter pubescentibus supra demum glabratis, glandula magna supra basin petioli jugalibus parvis paucis, pedunculis axillaribus solitariis geminisve ferrugineo-velutinis, capitulis amplis multifloris, calyce tubuloso ferrugineo-villoso corolla pubescente subtriplo breviore, ovario sessili glabro.—*Inga ferruginea*, Guillem. et Perr. Fl. Seneg. p. 236. *Acacia malacophylla*, Steud. in Pl. Abyss. Herb. Un. Itin. n. 521.—Senegambia, *Leprieur* and *Perrottet*, *Heudelot*, n. 881; Hot elevated plain between Schiri and Sana in Abyssinia, *Schimper*.

10. A. *odoratissima*, ramulis petiolisque minute puberulis, stipulis deciduis, pinnis 3-8-jugis, foliolis 8-25-jugis late oblongis acutiusculis v. obtusis valde inæquilateris subtus glaucis, glandula prope basin petioli et inter pinnas superiores, panicula polycephala, capitulis paucifloris, floribus sessilibus pubescentibus, calyce corolla 4-5-plo breviore, ovario subsessili glabro.—*Acacia odoratissima*, Willd. DC. Prodr. 2, p. 466. *Albizzia micrantha*, Boivin l. c.—Flores in hac et sequentibus speciebus multo minores quam in præcedentibus.—East Indian Peninsula, a large and handsome tree, the timber particularly hard and strong, *Roxburgh*. Again Mr. Boivin appears to me to have uselessly changed the specific name of this species.

11. A. *Lebbekioides*, ramulis petiolisque subpilosis, pinnis 3-8-jugis, foliolis multijugis ovato-oblongis acutiusculis basi obliquis glabris subtus glaucis, glandula ad basin petioli, jugalibus paucis parvis, legumine oblongo.—*Acacia Lebbekioides*, DC. Prodr. 2, p. 467, Decaisne, Herb. Tim. p. 133.—Island of Timor. I have not seen the plant, and the flowers are unknown, but from the description, as far as it goes, it must be in other respects near to A. *odoratissima*. The pod is, however, said to be half as broad again as in A. *Lebbek*, whilst in A. *odoratissima* it is not broader than in some varieties of A. *Lebbek*, and often narrower, but the proportionate length and breadth of the pod is very variable in several species of this genus.

Flowering specimens gathered by A. Cunningham at Careening Bay may possibly be this species, if so it is very near to A. *Lebbek*, but has rather smaller and more numerous leaflets (often 10 to 12 pair), and the flowers rather smaller. This should probably be referred to A. *Lebbek* γ.

12. A. *procera*, ramulis leviter angulatis, foliis junioribus sericeo-puberulis demum glabratis, pinnis 3-4-jugis, foliolis 6-8-jugis oblique ovali-oblongis obtusis v. acutiusculis inæquilateris petiolulatis, glandula magna ad basin petioli, jugalibus paucis parvis, panicula laxa, pedunculis plerisque 2-3-nis, capitulis 15-20-floris, floribus sessilibus, calyce dentato corolla vix triplo longiore, ovario subsessili glabro.—*Mimosa procera*, Roxb. Pl. Cor. 2, t. 21. *Acacia procera*, Willd. DC. Prodr. 2, p. 466. *Mimosa elata*, Roxb. *Acacia elata*, Grah. in Wall. Cat. n. 5233. *Mimosa coriacea*, Blanco? Fl. Filip. p. 734.—East India, Burma territory, Wallich, Philippine Islands, *Cuming*, n. 1563.

13. A. *Milletti* (sp. n.), ramulis subteretibus petiolisque glabris, stipulis deciduis, pinnis 3-6-jugis, foliolis 4-10-jugis obovato-oblongis obtusis retusisve basi obliquis glabris, glandula parva prope basin petioli, jugalibus raris v. nullis, panicula laxa, pedunculis plerisque 2-3-nis, capitulis paucifloris, floribus sessilibus, calyce dentato corolla quadruplo breviore, ovario breviter stipitato glabro.—Habitus et folia fere A. *re-*

tusæ, flores minores, densiores, fere glabri. Corolla basi minus attenuata. Ovarium brevius. Stamina breviter monadelpha. Legumen semipedale, 1¼ poll. latum.—China near Macao, *Millett.*

14. A. *retusa* (sp. n.), ramulis subteretibus petiolisque glabriusculis, pinnis 4-6-jugis, foliolis 6-10-jugis obovato-oblongis obtusis retusisve basi obliquis utrinque glabris, glandula subimmersa ad basin petioli, jugalibus ad folia et pinnas suprema, panicula laxa, pedunculis plerisque 2-3-nis, floribus pedicellatis minute puberulis, calyce truncato subdentato corolla triplo breviore, ovario breviter stipitato glabro.—Foliola 6-9 lin. longa, 3-4 lin. lata, margine subrevoluta. Capitula 10-15-flora. Corolla 3 lin. longa. Stamina numerosa fere pollicaria, tubo corollam excedente.—Philippine Islands, *Cuming*, n. 1223 and 1593.

§ 4. *Microphyllæ.* Pinnæ multijugæ (sæpius 10-18-jugæ). Foliola multijuga, linearia, parva (1-3 lin. longa) obtusiuscula, parum inæquilatera, nervo centrali v. parum excentrico. Capitula globosa.

15. A. *myriophylla*, ramulis petiolisque pubescentibus, stipulis subulatis deciduis v. hinc inde persistentibus indurato-conicis, pinnis 15-18-jugis, foliolis multijugis parvis oblongo-linearibus falcatis, glandula magna prope basin petioli, jugalibus paucis parvis, pedunculis fasciculatis paniculatis, capitulis parvis 10-20-floris, floribus sessilibus puberulis, calyce campanulato corolla pluries breviore, ovario breviter stipitato minute puberulo.—Capitula quam in sequente minora, folia majora foliolis minoribus. — *Mimosa microphylla*, Roxb. *Acacia myriophylla*, Grah. in Wall. Cat. n. 5242. — Sillet, *Wallich.*

16. A. *amara* (Boivin, l. c.), ramulis petiolisque velutino-pubescentibus, pinnis 7-11-jugis approximatis, foliolis multijugis parvis oblongo-linearibus falcatis, glandula in petiolo et inter pinnas supremas, pedunculis in axillis supremis fasciculatis subracemosis, capitulis 12-20-floris, floribus sessilibus puberulis, calyce corolla subtriplo breviore, ovario

stipitato glabro.—*Acacia amara*, Willd. DC. Prodr. 2, p. 469. *Acacia nellyrenza*, Grah. in Wall. Cat. n. 5240.—*Acacia Wightii*, Grah. W. et Arn. Prodr. Fl. Penin. Ind. Or. 1, p. 274. —A tall tree, common in the East Indian Peninsula.

17. A. *sericocephala*, ramulis petiolisque velutino-pubescentibus, stipulis parvis deciduis, pinnis 10-20-jugis approximatis, foliolis multijugis parvis imbricatis linearibus utrinque sericeis, glandula in petiolo, jugalibus paucis parvis, pedunculis fasciculatis subracemosis, capitulis globosis, floribus sessilibus sericeis, calyce corolla subtriplo breviore, ovario substipitato puberulo.—*Acacia sericocephala*, Fenzl. in Pl. Abyss. Herb. Un. Itin.—Species vix ac ne vix ab A. *amara* distincta foliolis parvis numerosis, pube subsericea, et leguminibus junioribus puberulis.—Æthiopia, *Kotschy*, Herb. Un. Itin. Fl. Nub. n. 294. Sennaar, *Kotschy*, n. 244, Abyssinia, *Schimper*, Herb. Un. Itin. Fl. Abyss. n. 818, 883.

§ 5. *Falcifolia.* Pinnæ pluri-sæpius multi-jugæ. Foliola multijuga, falcata, acuta, nervo margini interiori approximato. Capitula globosa.

18. A. *Julibrissin* (Boivin, l. c.), glabra v. ramulis foliisque junioribus pubescentibus, stipulis linearibus deciduis, pinnis 7-11-jugis, foliolis multijugis falcato-oblongis acutis nervo marginali, glandula prope basin petioli, jugalibus paucis v. nullis, pedunculis elongatis subracemosis, capitulis amplis multifloris, floribus sessilibus sericeo-puberulis glabratisve, calyce corolla subtriplo breviore, ovario sessili minute puberulo. — *Acacia Julibrissin*, Willd. DC. Prodr. 2, p. 469. *Acacia Nemu*, Willd. DC. l. c.—Legumen glabrum v. plus minus pubescens.—Mountains of Central Asia: North Persia, *Gmelin*, *Fischer*; East India; North China, *Bunge*; Japan, &c. and frequently planted as an ornamental tree in South Europe, North Africa, Asia, and some parts of America.

β *mollis*, foliis floribusque molliter pubescentibus.—*Acacia mollis*, Wall. Pl. As. Rar. 2, p. 76, t. 177. *Albizzia mollis*, Boivin, l. c. *Acacia Isembergiana*, Schimp. Pl. Abyssin. herb. Un. Itin. n. 275.—In gardens in Nipal, and in Abys-

sinia. Neither Dr. Wallich nor Dr. Schimper appear to have found it wild.

19. A. *stipulata* (Boivin, l. c.), ramulis petiolisque junioribus pubescentibus, stipulis amplis membranaceis acuminatis deciduis, pinnis 7-20-jugis, foliolis multijugis oblongo-linearibus falcatis acutis, nervo marginali, glandula prope basin petioli et inter pinnas superiores, pedunculis racemoso-paniculatis, capitulis 10-20-floris, floribus sessilibus sericeo-puberulis, calyce corolla subtriplo breviore, ovario subsessili glabro.—*Acacia stipulata* DC. Prodr. 2, p. 469.—*Acacia Smithiana*, Wall. Cat. Herb. Ind. n. 5237 (*Mimosa*, Roxb.)—*Acacia marginata*, Hamilt. in Wall, l. c. n. 5243.—East India: Ceylon, *Macrae*; Peninsula, *Wight*; Nipal, Chittagong and Attran, *Wallich*; Upper Assam, *Jenkins*.

20. A. *Forbesii* (sp. n.), ramulis petiolisque velutino-pubescentibus, stipulis parvis deciduis, pinnis 2-4-jugis, foliolis 10-15-jugis falcato-oblongis obtusis nervo submarginali utrinque rufo-sericeis v. supra demum glabratis, pedunculis longiusculis axillaribus, capitulis multifloris, floribus sessilibus rufo-sericeis, calyce corolla subtriplo breviore, ovario subsessili glabriusculo.—Delagoa Bay, east coast of Africa, *Forbes*.

XXIII. Zygia, *P. Brown.—E. Mey.*

Calyx tubulosus, 5-dentatus. Corolla infundibuliformi-tubulosa, breviter 5-loba. Stamina plurima, connata in tubum corolla multo longiorem, in alabastro spiraliter tortum, apice breviter libera. Legumen et habitus *Albizziæ*.

This African genus might perhaps be considered merely as a section of *Albizzia*, of which it has the fruit, and both species come near in habit to the *Albizzia rhombifolia*. The long, slender, staminal tube, gives them however a very singular appearance when in flower.

1. Z. *Brownei* (Walp. Repert. 1, p. 928), ramulis petiolisque minute tomentellis, pinnis 2-4-jugis, foliolis 3-4-jugis oblique ovato-rhombeis utrinque glabris, extimis majoribus.—*Inga Zygia*, DC. Leg. Mem. p. 440, t. 65.—Senegambia,

Leprieur and *Perrottet*, *Heudelot*, n. 800. Also in the West Indies, according to De Candolle, but I have not seen any specimens from thence.

2. Z. *fastigiata* (E. Mey. Comm. Pl. Afr. austr. p. 165) ramulis petiolisque ferrugineo-tomentosis, pinnis 5-6-jugis, foliolis 8-15-jugis oblique trapezoideo-oblongis supra glabris subtus pubescentibus, ultimis minoribus.—Near Port Natal, *Drège*, and apparently the same species, Senegambia, *Heudelot*, *n.* 16.

Mimosa virgultosa, Vahl., referred to this genus by Walpers, is a species of *Inga*. *Inga sassa*, Willd. Sp. 4, p. 1027, is probably a third species of *Zygia*.

XXIV. CALLIANDRA, *Benth.*

Flores plerique hermaphroditi. Calyx campanulatus 5-dentatus v. rarius 5-fidus, sæpius striatus. Corolla infundibuliformi-companulata, rarius subtubulosa, laciniis striatis v. tenuiter membranaceis. Stamina indefinita sæpius numerosa corolla pluries longiora, basi in tubum coalita et corollæ sæpius plus minus adnata. Legumen lineare, rectum v. vix falcatum, compressum, in valvulas 2 lignosas coriaceas v. submembranaceas marginibus valde incrassatis ab apice ad basin elastice dehiscens, intus uniloculare epulposum. Seminum funiculus sæpius brevis.—Frutices v. arbores parvæ, Americæ calidioris incolæ, sæpius inermes. Folia bipinnata, petiolo rhachique fere in omnibus eglandulosis. Stipulæ in ramulis floriferis v. ad basin pedunculorum sæpius persistentes, subimbricatæ, foliaceæ, membranaceæ v. induratæ, in ramulis vegetioribus nonnunquam deciduæ, rarius postice in spinam utprimum reflexam mox patentem v. surrectam productæ. Capitula florum globosa, pedunculata v. rarius sessilia, in axillis foliorum superiorum v. in racemo terminali solitaria gemina v. rarius plura, staminibus (ultrapollicaribus) purpureis v. albis comosa, speciosa. Flores centrales sæpius quam in *Albizzia* difformes, corolla elongato-tubulosa, staminum tubo longe exserto.

This beautiful genus is peculiar to the American continent. It has as it were the corolla of an *Albizzia*, the stamens of an *Inga*, and a pod different from that of any other genus. All the species (except C. *scutellata* C. *filipes*, C. *tubulosa*, and sometimes C. *obovata*) may be distinguished at once, even without the pod, from *Albizzia*, by the absence of glands on the leaf-stalks, from almost all *Pithecolobia*, by the size of the flower heads, and by the stipules; and the remarkable manner in which the valves of the pod roll back, leave no doubt as to the genus in any case where that organ can be observed. The old species have been usually referred to *Inga*, when seen in flowers only, and to *Acacia* when found in fruit.

§ 1. *Macrophyllæ.* Pinnæ et foliola pauci-(1-4-)juga. Foliola ultima ultrapollicaria (usque ad 8 poll. longa), basi valde obliqua, inferiora præsertim interiora multo minora. Flores sessiles. Calyx obtuse et (nisi in C. *amazonica*) breviter 5-dentatus.

1. C. *amazonica* (sp. n.), glabra, stipulis falcato-ovatis acutis membranaceis, pinnis unijugis, foliolis unijugis maximis falcato-ovatis obtuse acuminatis 2-3-nerviis, pedunculis fasciculatis remote racemosis, racemis subpaniculatis, calyce glanduloso-ciliato semi-5-fido corolla turbinato-campanulata triplo breviore.—Scandens videtur. Stipulæ subsemipollicares. Foliola 5-7 poll. longa. Paniculæ rami divaricati. Capitula magnitudine C. *Portoricensis.* Legumen junius planum margine crasso, maturum non vidi.—On the Amazon river, *Pœppig*, n. 2070.

2. C. *trinervia* (sp. n.), glabra, stipulis . . ., pinnis unijugis, foliolis unijugis amplis v. tertio minore sesquijugis falcato-ovatis obtuse acuminatis nitidis subtus elevato-2-3-nerviis, pedunculis fasciculatis, calyce breviter dentato corolla tenui infundibuliformi-tubulosa pluries breviore.—Rami verrucosi, ramulis floriferis abbreviatis stipularum vestigiis obtectis. Petioli læves. Foliola 3-4-pollicaria, foliolo tertio vix pollicari v. deficiente. Calyx ½ lin. longus. Corolla 3½ lin., tubo

elongato tenui. Stamina subpollicaria, tubo longe exserto. Legumen non vidi. — On the Rio Negro, North Brazil, *Langsdorff*.

3. C. *carbonaria* (sp. n.), glabra, stipulis lanceolato-subulatis deciduis parvis, pinnis unijugis, foliolis amplis unijugis v. tertio minimo sesquijugis falcato-oblongis obtuse acuminatis opacis subtus elevato-2-3-nerviis, pedunculis axillaribus fasciculatis, calyce breviter dentato corolla tubuloso-campanulata 3-4-plo breviore, legumine coriaceo crasse marginato glabro.—Frutex elatus v. arbor parva, C. *trinerviæ* similis. Foliola angustiora, 3-5-pollicaria, tertio sublanceolato vix pollicare sæpe deficiente. Capitula multiflora, densa. Calyx 1 lin., corolla 2 lin. longa, tubo in faucem elongatam ampliato. Staminum tubus longiuscule exsertus.—Province of Popayan, near the river Palace and the Rio Blanco, where the inhabitants call it "Carbonero," *Hartweg*, n. 964.

4. C. *emarginata*, glabra, stipulis lanceolato-subulatis parvis, pinnis unijugis, foliolis sesquijugis oblique obovato-oblongis obtusiusculis dimidiato-cordatis coriaceis subtrinerviis, pedunculis fasciculatis subpaniculatis, calycibus dentatis corolla infundibuliformi-tubulosa 5-6-plo brevioribus.—*Inga emarginata*, Humb. et Bonpl. DC. Prodr. 2, p. 438.—Unknown to me, but apparently near the two last.—Near Acapulco, *Humboldt* and *Bonpland*.

5. C. *Harrisii*, ramulis puberulis, stipulis parvis falcatis, pinnis unijugis, foliolis sesquijugis oblique obovato-falcatis utrinque puberulis uninervii reticulate-venosis, pedunculis axillaribus fasciculatis villosis, calycis dentibus glanduloso-puberulis corolla subinfundibuliformi calyce triplo longiore.—*Inga Harrisii*, Lindl. Bot. Reg. 1840-41.—Frutex scandens. Foliola subpollicaria, obtusa, pube sparsa, in pagina inferiore densiore. Pedunculi vix pollicares. Capitula majuscula. Calyx 1¼ lin. longus, tubo striato, dentibus ovatis obtusissimis incrassatis. Corolla 4 lin. v. paullo longior. Stamina sesquipollicaria, ultra corollam connata, purpurascentia. Legumen non vidi.—Mexico.

6. C. ? *coriacea*, glabra ? pinnis unijugis, foliolis sesquijugis

oblongo-lanceolatis acutiusculis subdimidiatis rigidis coriaceis, pedunculis axillaribus fasciculatis, legumine lineari recto glabro.—*Inga coriacea*, Humb. et Bonpl. ex Willd. Spec. 4, p. 1010.—Rami teretes fusci. Foliola terminalia, bipollicaria, inferiora sesquipollicaria. Capitula circa 12-flora Legumen tripollicare.—South America, *Humboldt* and *Bonpland.* Neither Kunth nor myself have seen this plant.

7. C. *tergemina*, glabra, stipulis parvis ovato-lanceolatis, pinnis unijugis, foliolis sesquijugis oblique obovali-oblongis obtusis, pedunculis petiolo longioribus, floribus glabris, calycibus minutis corolla multoties brevioribus, legumine plano glabro valvulis membranaceo-coriaceis margine incrassatis.—*Inga tergemina*, Willd. DC. Prodr. 2, p. 437.—West Indies: Martinica, *Sieber* n. 322; Dominica, *Imray*; St. Vincent's, *Guilding.*

8. C. *cylindrocarpa* (sp. n.), glabra, stipulis parvis ovato-lanceolatis, pinnis unijugis, foliolis sesquijugis oblique obovali-oblongis obtusis, pedunculis petiolum subæquantibus, floribus glabris, calycibus corolla vix triplo brevioribus, legumine lignoso subtereti vix marginato glabro.—Species foliis C. *tergeminæ* affinis, calyce et fructu distinctissima. Legumen 4 poll. longum, læve, marginibus non prominentibus, valvulis crassis lignosis semiteretibus more generis post dehiscentiam elastice revolutis.—Tropical Brazil, near Rio Janeiro, *Sello, Pohl, Tweedie,* n. 1218, *Gardner,* n. 22 *and* 23.

9. C. *canescens*, molliter pubescens, stipulis parvis ovato-lanceolatis acutis, pinnis unijugis, foliolis sesqui-aut bi-jugis oblique obovali-oblongis obtusis uninerviis reticulato-venosis, pedunculis rigidulis petiolo longioribus, floribus villosis, calyce tubuloso apice puberulo corolla turbinato-subinfundibuliformi dimidio breviore.—*Inga canescens*, Cham. et Schl. Linnæa 5, p. 592. Habitu et foliis C. *tergeminæ* affinis, imprimis pube diversa, a C. *Harrisii* foliolis dimidio minoribus, ab utraque specie floribus distincta.—Mexico, *Schiede* and *Deppe.*

10. C. *Guildingii* (sp. n.) glaberrima, stipulis ovatis acute

acuminatis, pinnis unijugis, foliolis 2-3-jugis ultimis oblique ovatis inferioribus rhomboideis omnibus nitidis, pedunculis petiolo longioribus, calycibus tubuloso-campanulatis striatis corolla plus duplo brevioribus, legumine lignoso falcato marginibus incrassatis basi longe attenuato.—Foliola terminalia sesquipollicaria, inferiora minora inæqualia, glaberrima, subtrinervia, reticulato-venosa. Corolla 5 lin. longa, semi-5-fida, membranacea. Stamina 2½-pollicaria, pauca, tubo subexserto. Legumina 4-5-pollicaria.—St. Vincent's, *Guilding.*

11. C. *falcata* (sp. n.), ramulis molliter rufo-villosis, stipulis lanceolato-subulatis elongatis rigidis striatis, pinnis unijugis, foliolis 3-4-jugis falcato-semiovatis 2-3-nerviis supra parce subtus densius pubescentibus, pedunculis petiolo communi pluries longioribus, calyce campanulato brevissime dentato corolla subinfundibuliformi sub-4-plo breviore.—Stipulæ fere semipollicares. Foliola ultima 2-3-pollicaria, inferiora multo minora, omnia rigide membranacea, breviter et obtuse acuminata, venis reticulatis utrinque prominulis. Pedunculi sesquipollicares. Calyx striatus. Corolla 3 lin. longa, apice rufo-pubescens, limbo amplo late 5-fido. Stamina numerosa basi breviter monadelpha, bipollicaria v. paullo longiora. Legumen non vidi.—Raised in Mr. Knight's nursery from Mexican seeds.

12. C. *mollissima*, ramulis hirto-tomentosis, stipulis ovato-lanceolatis acuminatis, pinnis unijugis, foliolis 4-jugis oblique obovatis binerviis utrinque mollissime sericeo-villosis, pedunculis petiolo communi longioribus, calyce campanulato acute dentato corolla infundibuliformi 4-plo breviore, legumine tomentosa-hirto.—*Inga mollissima,* Kunth. DC. Prodr. 2. p. 439.—Between the Amazon and the Rio de Chota, in the province of Jean de Bracamoras, *Humboldt* and *Bonpland.* Unknown to me.

§ 2. *Lætevirentes.* Foliola pluri- sæpius multi-juga, parva (vix semipollicaria nec unquam nisi in C. *capillata* pollicaria), membranacea, lætevirentia nec nitida. Flores sessiles. Calyx ad medium v. profunde 5-fidus. Filamenta sæpius albida v. rosea.

The light colour of the stamens give the species of this group a general resemblance to the *Albizziæ*, and two species have glands on the petioles; but the pods, as well as the geographical station are quite different.

13. C. *capillata* (sp. n.), glabra, stipulis late oblongis obtusis membranaceis striatis, pinnis 2-3-jugis, foliolis 3-4-jugis valde obliquis obovato-ellipticis, pedunculis tenuibus rigidulis in axillis subfasciculatis, floribus glaberrimis, calycis semi-5-fidi laciniis oblongis acutiusculis corolla plus dimidio brevioribus.—Stipulæ 3 lin. longæ, fere 2 lin. latæ. Foliola pollice paullo longiora. Flores in capitulo numerosi. Corolla 2½ lin. longa, limbo amplo, laciniis striatis. Stamina circa 50, sesquipollicaria, basi breviter monadelpha.—Mexico, at the base of Mount San Felipe, *Andrieux*, n. 404.

14. C. *formosa*, arborea, glaberrima, stipulis oblongis lanceolatisve striatis persistentibus, pinnis bijugis, foliolis 4-6-jugis obovato-ellipticis basi valde inæquilatis, pedunculis filiformibus fasciculatis in racemos axillares terminalesve dispositis, floribus glaberrimis.—*Acacia formosa*, Kunth, DC. Prodr. 2, p. 466.—Mexico; near Guanaxuato, *Humboldt and Bonpland*; Granite rocks near the Pacific, *Galeotti*, n. 3190.

15. C. *viridiflora* (Tweedie MS. sub Acacia), ramulis petiolisque glabris v. ad articulationes pilosis, stipulis oblongo-lanceolatis, foliis eglandulosis pinnis 2-3-jugis, foliolis 5-7-jugis dimidiatim obovato-oblongis membranaceis glabris junioribus ciliatis, pedunculis axillaribus filiformibus petiolo sublongioribus, floribus glabris, calyce profunde 5-fido corolla parum breviore.—C. *formosæ* et C. *filipedi* affinis. Stipulæ 2-3-lin. longæ, rufescentes, membranaceæ, striatæ, ciliatæ. Foliola ultima 8-10 lin. longa, par infimum cæteris pluries minus. Flores C. *filipedis*.— S. Jago del Estero, *Tweedie*.

16. C. *scutellifera* (Benth. in Hook. Journ. Bot. 2, p. 139) glabra v. ramulis petiolisque puberulis, stipulis linearibus acuminatis, pinnis 2-3-jugis, foliolis 6-9-jugis oblique obovato-oblongis falcatis membranaceis, glandula magna scutelliformi ad basin petioli, jugalibus parvis ad pinnas fere omnes et pluribus in petiolis partialibus, pedunculis axillaribus termi-

nalibusque filiformibus, floribus glabris, calyce semi-5-fido corolla dimidio breviore, legumine glabro valvulis membranaceo-coriaceis incrassato-marginatis.—Habitus et inflorescentia C. *filipedis*. Folia laxiora, pinnæ pauciores, foliola parum majora, stipulæ angustiores et glandulæ diversæ. Legumen 3-4-pollicare, fere C. *portoricensis*.—Ribeira in Brazil (Prov. Minas Geraes ?) *Langsdorff*.

17. C. *filipes* (Benth. l. c.) ramulis petiolisque puberulis, stipulis lanceolato-falcatis, pinnis 3-4-jugis, foliolis 10-16-jugis dimidiato-oblongis v. oblongo-lanceolatis falcatis membranaceis mucronulatis glabris, junioribus ciliatis, glandulis parvis in petiolo communi partialibusve sparsis, pedunculis axillaribus filiformibus fasciculatis, floribus glabris, calyce profunde 5-fido corolla dimidio breviore.—Hæc species et C. *scutellifera* ab omnibus hujus sectionis differunt petiolo glandulifero. Cæterum C. *tetragona* et C. *portoricensi* affinis est. Ramuli obscure tetragoni. Stipulæ 2-3 lin. longæ. Glandulæ quam in præcedente multo minores. Foliola 4-6 lin. longa. Corolla ample campanulata semi-5-fida, 2 lin. longa. Legumen non vidi.—Brazil, *Pohl*.

18. C. *tetragona* (Benth. l. c.) ramulis tetragonis petiolisque pilosis v. demum glabratis, stipulis lanceolatis persistentibus, pinnis 4-6-jugis, foliolis multijugis oblongo-linearibus basi valde inæquilateris glabris ciliatisve, pedunculis axillaribus subterminalibusque fasciculatis, floribus glabris, legumine glabro, valvulis tenuibus margine incrassatis.—*Acacia tetragona*, Willd. DC. Prodr. 2, p. 468. A. *quadrangularis*, Link. DC. l. c.—Caraccas, *Willdenow;* near Vera Cruz, *Schiede*.

19. C. *portoricensis*, ramulis teretibus petiolisque pubescentibus glabratisve, stipulis parvis lanceolatis linearibusve persistentibus, pinnis 2-4-rarius 5-6-jugis, foliolis multijugis oblongo linearibus basi valde inæquilateris glabris ciliatisque, pedunculis in axillis superioribus solitaris fasciculatisve, floribus glabris, leguminibus glabris obtusis v. incurvo-mucronatis, valvulis tenuibus margine incrassato.—*Acacia portoricensis*, Willd. DC. Prodr. 2, p. 467. A. *caracasana*,

Willd. DC. l. c. A. *ungulata*, Desv. DC. Prodr. 2, p. 466. A. *alba* Colla ex Linnæa 4, Littbl. p. 55. A. *Colleana*, Presl. ex Steud. Nom. Bot. ed. 2, p. 4. A. *vespertina*, Macfad. Fl. Jam., p. 308.—Variat pinnarum numero, foliorum et stipularum latitudine, legumine apice lato nunc obtusissimo nunc in unguem incurvum v. uncinatum producto.—Frequent in the hot regions of Mexico, Caraccas, and some of the West Indian Islands.

20. C. *angelica* (sp. n.,) arborea, ramulis foliisque molliter pubescentibus, stipulis parvis lanceolatis, pinnis 1-2-jugis, foliolis 6-10-jugis oblongo-linearibus utrinque pubescentibus membranaceis viridibus, pedunculis tenuibus puberulis petiolo communi longioribus, floribus glabriusculis, calyce profunde 5-fido corolla duplo breviore.—Stipulæ rigidulæ vix lineam longæ. Foliola 2-3-lin. longa, mollia, basi valde obliqua. Capitula quam in C. *portoricensi* minora. Corollæ vix linea longiores.—Ravines of Regla in Mexico, where it is commonly called *Cabellito de Angel, Galeotti*, n. 3362.

21. C. *malacophylla*, (sp. n.,) tota molliter villosa, stipulis brevissimis, pinnis unijugis, foliolis 3-4-jugis oblique obovato-falcatis viridibus membranaceis, pedunculis fasciculatis petiolo communi longioribus, floribus glabriusculis, calyce profunde 5-fido corolla duplo breviore.—Similis C. *angelicæ*. Stipulæ sæpe vix conspicuæ. Foliola 3-4-lin. vel ultima 6 lin. longa, obtusissima, mollia. Capitulæ fere C. *portoricensis*.—Mexico, at the foot of Mount San Felipe, *Andrieux*, n. 401.

22. C. *Lambertiana*.— *Acacia Lambertiana*, Don. DC. Prodr. 2, p. 468, is apparently allied to some of the preceding species, but is unknown to me.—Mexico.

§ 3. *Pedicellatæ*. Foliola *Nitidarum* v. interdum ampliora fere *Macrophyllarum*. Flores in umbellula pedicellati, numerosi. Filamenta sæpius purpurea.

The two first species of this group come near to some of the smaller-leaved *Macrophyllæ*, both in foliage and calyx, the others are very near the *Nitidæ*, but as they are several of them in some measure intermediate between the two groups, they may be considered as a separate one, charac-

terised by the flowers not closely sessile in a globular head, but pedicellate, so as to form a simple umbell.

23. C.? *obovata*, (sp. n.,) ramulis rufo-puberulis, stipulis parvis subulatis, pinnis 2-3-jugis, foliolis 2-4-jugis obovato-orbiculatis v. oblique subrhombeis uninerviis junioribus ciliatis demum glabris nitidis, pedunculis petiolo communi sublongioribus, floribus breviter pedicellatis, calyce turbinato dentato corolla subinfundibuliformi dimidio breviore.—Foliola rigidula, ultima 1-2 poll. longa. Petioli sæpius eglandulosi, interdum vero glandulam observavi parvam inter pinnas jugæ infimæ. Pedunculi 2-3-pollicares. Capitula magna, speciosa. Pedicelli fere 2 lin. longi, corolla 2 lin. v. paullo longior, membranacea, minute puberula. Legumen non vidi.—Brazil, *Lobb.*

24. C. *tubulosa*, (sp. n.,) ramulis lutescenti-v. ferrugineo-pubescentibus, stipulis lanceolato-linearibus, pinnis 2-4-jugis, glandula scutellæformi ad basin petioli, jugalibusque sæpe parvis inter foliola, foliolis 1-3-jugis oblique obovato-orbicularibus subrhombeisve supra parce subtus densius pubescentibus, pedunculis petiolo communi subbrevioribus, floribus breviter pedicellatis, calyce tubuloso ferrugineo-tomentoso breviter dentato corolla semi-5-fida sericeo villosa dimidio breviore.—Ramuli crassi sulcati. Stipulæ circa 3 lin. longæ, rigidulæ, sæpius obtusæ. Petioli communes semipedales; Foliola iis C. *obovatæ* similes. Glandula petiolaris maxima, jugalia pauca minima. Capitula circa 10-flora. Pedicelli 2 lin., calyces 3 lin. longi, molliter tomentosi. Stamina bipollicaria.—Brazil: banks of the Rio San Francisco, near Villa Nova, *Gardner*, n. 1280; Cuyabà, *Langsdorff.*

25. C. *leptopoda*, (sp.n.,) glabra v. molliter pilosa, stipulis maximis foliaceis late cordatis multinerviis reticulatis, pinnis unijugis, foliolis 2-4-jugis oblique obovato-falcatis, pedunculis gracilibus petiolo longioribus, pedicellis filiformibus flore multoties longioribus.—Frutex tripedalis, nunc glaberrimus glaucescens, nunc totus pilis mollibus patentibus vestitus. Stipulæ superiores fere pollicem longæ et latæ, consistentia et rete venarum foliolis similes. Foliola ultima

fere pollicem longa, semipollicem lata. Flores parvi, purpurei, in umbellula 15-20, pedicellis 6-9 lin. longis. Calyx vix semilineam longus. Corollæ laciniæ demum profunde solutæ. Legumen junius planum, marginibus valde incrassatis, perfectum non vidi.—Brazil: Serra Acurua. *Blanchet*, n. 2833, between Boa Esperanza and Santa Anna das Merces, *Gardner*, n. 2138; the hairy and smooth varieties mixed.

26. C. *pedicellata*, glabra v. ramulis pilosulis, stipulis plerisque ovato-lanceolatis appressis postice in spinulam patulam productis, pinnis unijugis, foliolis 4-7-jugis oblongis obtusis, pedunculis folio longioribus, floribus longe pedicellatis glabris, calycibus corolla plus duplo brevioribus, legumine sericeo-villoso valvulis coriaceis incrassato-marginatis.—*Acacia pilosa*, Bert? in DC. Prodr. 2, p. 455.—Frutex C. *hæmatommati* simillimus, sed pedicelli constanter calyce plus duplo longiores, et flores (teste Ehrenbergio) albi.—Haiti, *Ehrenberg*.

27. C. *umbellifera* (Benth. in Hook. Journ. Bot. 2, p. 141.) ramulis viscoso-puberulis, stipulis lanceolatis acutis, pinnis 1-2- rarius 3-jugis, foliolis multijugis ovali-oblongis obtusis subciliatis, pedunculis folio longioribus, floribus (centralibus exceptis) longe pedicellatis viscidulis subglabris, corolla calyce quadruplo longiore, legumine glabro valvulis membranaceis margine cartilagineo-incrassatis.—Dry hills near Crato in Cearà, *Gardner*, n. 1581; Piauhy, *Gardner*, n. 2555.

28. C. *Blancheti* (sp. n.), ramulis petiolisque pilosulis, stipulis lanceolatis acuminatis, pinnis unijugis, foliolis multijugis oblongo-linearibus obtusiusculis falcatis, pedunculis petiolo brevissimo multoties longioribus, pedicellis calyce sub-longioribus, calyce turbinato corolla plus dimidio breviore breviter 5-fido, corollaque membranaceis glabris.—Frutex ramosissimus, ramulis floriferis brevibus stipulis obtectis. Foliola 1½-2 lin. longa, conferta, rigidula, nitida, subciliata. Pedicelli exteriores 2 lin. longi. Corolla fere 4 lin. longa. Stamina bipollicaria.—Serra Jacobina, Brazil, *Blanchet*, n. 2584.

§. 4. *Nitidæ.* Foliola plura, sæpius multijuga, parva, (rarius semipollicaria nec unquam pollicaria), rigidula, supra nitida. Pedunculi axillares v. in ramulis abbreviatis subterminales, pauci. Flores in capitulo sessiles, v. vix in C. *Tweedii* et C. *turbinata* brevissime pedicellati. Filamenta sæpius purpurea, rarius albida.

* *Pinnis unijugis rarius subbijugis.*

29. C. *hæmatomma*, glabra v. ramulis pilosulis, stipulis lanceolatis appressis postice plerisque in spinulam patulam productis, pinnis unijugis, foliolis 4-7-jugis oblongis obtusis, pedunculis folio longioribus, calycibus corolla sericeo-pilosa subtriplo brevioribus, legumine sericeo-villoso valvulis coriaceis incrassato-marginatis.—*Acacia hæmatomma*, DC. Leg. Mem. p. 449, t. 68.—St. Domingo, *Bertero;* Bahamas, *Swainson.*

30. C. *chilensis* (sp. n.), appresse pilosa, stipulis lanceolatis acutis rigidis, pinnis unijugis, foliolis 3-5-jugis parvis oblongis obtusis v. acutiusculis utrinque appresse pilosis, pedunculis petiolo communi longioribus, calycibus corolla pilosa dimidio brevioribus, legumine appresse pubescente, valvulis rigide membranaceis, margine valde incrassato.—Fruticulus rigidus, tortuoso-ramosissimus. Stipulæ parvæ persistentes demum subpungentes. Petioli communes circa 2 lin., partiales 3 lin. longi. Foliola 1½-2 lin. longa, crassiuscula, uninervia, punctata. Corolla 4 lin. longa, tubo brevi, limbo 5-fido. Stamina numerosa. Legumen sesquipollicare, oligospermum.—Chili, *Bridges*, n. 1291.

31. C. *sessilis* (Benth. in Hook. Journ. Bot. 2, p. 141), glabra v. pilosula, pinnis unijugis, foliolis multijugis falcato-oblongis obtusiusculis, capitulis sessilibus terminalibus, floribus glabris, calyce 5-dentato corolla dimidio breviore laciniisque corollæ striatis. Stipulæ ovatæ obtusæ, striatæ, ramulos floriferos brevissimos obtegentes. Petiolus communis 1-2 lin., partiales 1-1½ poll. longi. Foliola 15-20-juga, 2-3 lin. longa. Capitula stipulis bracteæformibus suffulta, 15-20 flora. Calyx 1 lin., corolla 2 lin. longa.

Stamina pauca. Legumen mihi ignotum.—Serra Acurua in Brazil, *Blanchet*, n. 2816.

32. C. *squarrosa*, ramulis petiolisque pilosulis, stipulis lanceolatis acutis, pinnis 1-2-jugis, foliolis multijugis linearibus obtusis, pedunculis axillaribus terminalibusque petiolo brevissimo multoties longioribus, floribus glabris, calycibus brevissime dentatis corolla plus dimidio brevioribus corollisque striatis. — *Acacia squarrosa* Mart. in Herb. Hook. *A. Magdalenæ* Bert. in DC. Prodr. 2, p. 455?—Fruticulus ramosissimus. Stipulæ ad basin pedunculorum imbricatæ, induratæ, 1½-2 lin. longæ. Petiolus communis 1-2 lin., partiales fere pollicem longi. Foliola crebra, 1½ lin. longa. Calyx 1 lin. dentibus acutis, corolla 2½ lin. longa, limbo ample campanulato. Ovarium glabrum. Legumen non vidi. —Brazil, Campo Serral, *Martius*.

33. C. *taxifolia*, petiolis pubescentibus, pinnis unijugis, foliolis multijugis oblongis dimidiato-cordatis glabris, capitulis axillaribus solitariis paucifloris breve-pedunculatis.—*Inga taxifolia* Kunth., DC. Prodr. 2, p. 439.—Andes of Quito. Unknown to me.

34. C. *brevipes* (Benth. in Hook. Journ. Bot. 2, p. 140.), glabra, pinnis unijugis, foliolis multijugis oblongo-linearibus falcatis obtusiusculis glabris, pedunculis axillaribus terminalibusque subfasciculatis petiolo brevi longioribus, calyce minute 5-dentato ciliolato extus corollaque glabris, legumine glabro valvulis membranaceo-coriaceis crasso-marginatis.—Frutex ramosissimus. Stipulæ minutæ, rarius 1 lin. longæ. Petiolus communis 1-2 lin., partiales circa pollicem longi. Foliola 15-25-juga, 1-3 lin. longa. Calyx vix ½ lin. longus, corolla 2 lin., limbo ample campanulato. Stamina circa 20. Legumen 2-3-pollicare, margine fere lignoso.—Brazil; *Pohl, Sello, Martius (Herb. Fl. Bras.* n. 1100).

35. C. *purpurea*, glabra, stipulis lanceolatis acutis, pinnis unijugis, foliolis 3-7-jugis ovatis v. obovato-oblongis obtusis, pedunculis petiolo longioribus, floribus glabris, calycibus corolla triplo brevioribus, legumine glabro, valvulis coriaceis sublignosis incrassato-marginatis. — *Inga purpurea* Willd.

DC. Prodr. 2, p. 439.—West Indies; Antigua, *Nicholson*, Ste. Croix, *Herb. Berol.*; St. Vincent's, *Anderson*; Martinica; South American coast, Para, Demerara and Cumana, *Herb. Hooker*.

36. C. *Surinamensis* (sp. n.), ramulis petiolisque pubescentibus, stipulis lanceolatis, pinnis unijugis, foliolis 8-10-jugis oblique oblongo-lanceolatis obtusiusculis coriaceis glabris ciliatisve, pedunculis axillaribus petiolo brevissimo pluries longioribus, floribus glabris, calyce dentato corolla ter breviore.—Intermedia fere inter C. *purpuream* et C. *virgatam*. Foliola quam in hac pauciora et latiora, angustiora et numerosiora quam in illa. Flores et stamina alte connata C. *virgatæ*. Petioli etiam partiales et pedunculi pubescentes.—Surinam, *Hostmann*, n. 171.

37. C. *virgata* (Benth. in Hook. Journ. Bot. 2, p. 140), ramulis petiolisque vix puberulis, stipulis lanceolato-setaceis, pinnis unijugis, foliolis multijugis oblique cordato-lanceolatis mucronatis coriaceis rigidis glabris, pedunculis subsolitariis petiolo brevissimo pluries longioribus, floribus glabris, calyce dentato corolla ter breviore.—Stipulæ vix 2 lin. longæ. Petiolus communis 2-3 lin., partiales 3-5 poll. longi. Foliola 4-8 lin. longa, pleraque falcata. Pedunculi bipollicares rigidi. Capitulum densum. Corollæ 3½ lin. longæ, laciniis apice leviter striatis. Stamina numerosa. Ovarium glabrum. Legumen non vidi.—Brazil, *Pohl*.

* *Pinnis 2-3-jugis, rarius 4-jugis.*

38. C. *eriophylla* (sp. n.), ramulis petiolisque tomentoso-lanatis, stipulis lineari-lanceolatis rigidis, pinnis 2-3-jugis, foliolis multijugis oblongo-linearibus obtusiusculis subtus sericeo-pilosis, pedunculis tenuibus petiolo longioribus, calycibus minimis corolla pilosa multoties brevioribus.—Specimen unicum vidi C. *Cumingii* affine, sed ut videtur specifice distinctum foliis et foliolis multo minoribus, subtus pilis albis longis dense obtectis. Corollæ paullo breviores et latius campanulatæ.—Mexico; Chila in the district of Pueblo, *Andrieux*, n. 405.

39. C. *Californica* (Benth. Bot. Sulph. p. 14. t. 11), ramu-

lis petiolisque appresse pilosis demum glabratis, stipulis lanceolato-subulatis rigidis, pinnis 2-4-jugis, foliolis 8-15-jugis oblongis obtusiusculis utrinque appresse pilosis demum coriaceis nitidis, pedunculis tenuibus petiolo paullo longioribus, calycibus corolla pubescente multoties brevioribus.—Species C. *eriophylla* et C. *Cumingii* affinis, sed ab utraque distincta. —Bay of Magdalena, Lower California, *Hinds.*

40. C. *Cumingii* (Benth. in Hook. Journ. Bot. 2, p. 140), ramulis petiolisque puberulis, stipulis lanceolatis acutis rigidis, pinnis distantibus 2-3-jugis, foliolis multijugis oblongo-linearibus obtusiusculis glabris, pedunculis tenuibus petiolo vix brevioribus, calycibus corolla pilosula multoties brevioribus.—Ramuli brevissimi, stipulis imbricatis obtecti. Petioli communes pollicares, partiales 1-2-pollicares. Foliola 10-25-juga, 2-3 lin. longa. Calyces vix semilineam longi. Corolla tubuloso-campanulata, fere 4 lin. longa. Stamina pollicaria. Ovarium glabrum. Legumen non vidi.—Panama and Western Columbia, *Cuming*, n. 1248.

β. ? *Galeottii*, pinnis 3-6-jugis, corollis glabrioribus.—Mexico; woods of the province of Oaxaca at an elevation of 6 to 7000 feet, *Galeotti*, n. 3148.

41. C. *Xalapensis* (sp. n.), ramis petiolisque pilosulis demum glabratis, stipulis lanceolatis acuminatis, pinnis 2-5-jugis distantibus, foliolis multijugis oblique ovali-oblongis obtusis junioribus ciliatis demum glabris, pedunculis petiolo subbrevioribus, calycibus turbinato-campanulatis 5-dentatis corolla glabriuscula subtriplo brevioribus.—Affinis hinc C. *bicolori*, hinc C. *Cummingii* et C. *Californicæ*, a priore diversa foliorum pinnis paucis distantibus, foliolis majoribus proportione multo latioribus, ab his calyce multo majore distinguenda. Ovarium glaberrimum. Legumen ignotum.—Mexico; woods of the neighbourhood of Xalapa, *Galeotti*, n. 3314.

42. C. *mertensioides*, ramis petiolisque hirsutis, stipulis lanceolato-subulatis rigidis, pinnis 2-3-jugis, foliolis 12-15-jugis oblongis subtus villosis trinerviis, pedunculis elongatis subtus villosis, calycibus dentatis corolla duplo brevioribus,

legumine glabro.—*Acacia asplenioides*, Nees. Bot. Zeit. 4. p. 203. *Inga mertensioides*, Nees et Mart. DC. Prodr. 2, p. 446. —Fruticulus prostratus. Foliola ultima 3 4 lin. longa. Capitula majuscula 8-10-flora. Filamenta purpurea. Species mihi ignota.—Brazil in the Campos of Goyaz, Bahia, and Minas Novas, *Martius*.

43. C. *bicolor* (Benth. in Hook. Journ. Bot. 2, p. 139.), ramulis petiolisque pilosulis demum glabris, stipulis lanceolatis acutis, pinnis 3-6-jugis, foliolis multijugis parvis linearibus obtusiusculis, pedunculis petiolo longioribus, floribus glabriusculis, calyce corolla dimidio breviore ore dentato ciliolato, legumine coriaceo lignoso marginato pilosulo.—Fruticulus humilis. Pinnæ ¾-poll. longæ, foliolis crebris 1-1½ lin. longis. Corolla 3 lin. longa. Legumen 2-3-pollicaria.—South Brazil; sandy shores of the Uruguay and Banda Oriental, *Sello, Tweedie, Baird*, &c.

44. C. *Tweedii* (Benth. in l. c. p. 140), ramulis petiolisque pilosis, stipulis ovatis acutiusculis, pinnis 3-4-jugis, foliolis multijugis oblongo-linearibus acutiusculis ciliatis subtus pilosis, pedunculis petiolo longioribus, bracteolis sub flore lanceolatis linearibusve deciduis, floribus brevissime pedicellatis molliter pilosis, calyce turbinato corolla dimidio breviore, legumine sublignoso crasso dense villoso.—Arbor parva v. in montosis fruticulus humilis (Tweedie). Pili molles albidi, in partibus junioribus dense sericei, in adultioribus rariores patentes. Stipulæ striatæ, 3-4 lin. longæ. Petiolus communis 1-2 poll., partiales 1-1½ poll. longi. Foliola crebra, 2 3 lin. longa. Capitula 15-20 flora. Calyx membranaceus, ad medium 5-fidus. Legumen 2-3-pollicare, utrinque attenuatum, marginibus incrassatis.—Common on the rocky shores and mountains of the Rio Grande and Rio Jaquhy in South Brazil; *Tweedie, Sello*.

45. C. *stipulacea* (Benth. in l. c. p. 137), ramulis petiolisque glabris v. vix puberulis, stipulis lanceolatis obtusis rigidis, pinnis 3-4-jugis, foliolis 8-12-jugis oblique oblongis obovatisve subcoriaceis glabris, pedunculis fasciculatis petiolo brevioribus, calycibus glabris corolla adpresse pubescente

subtriplo brevioribus.—Arbuscula. Petioli communes plerique bipollicares, partiales ultimi longiores, infimi breviores. Foliola sæpius semipollicaria. Ovarium breviter villosum. Legumen non vidi.—British Guiana. *Schomburgk*, n. 582.

46. C. *fasciculata* (Benth. in l. c. p. 140), ramulis petiolisque glabris v. minutissime tomentellis, stipulis parvis lanceolatis rigidis, pinnis 2-4-jugis, foliolis multijugis falcato-linearibus obtusiusculis supra nitidis glabris, pedunculis petiolo subbrevioribus, floribus glabris, calycibus 5-dentatis corolla plus triplo brevioribus, legumine lignoso glabro.—Petioli communes pollicares, partiales usque ad duplo longiores. Foliola crassiuscula, 3-4 lin. longa. Corolla 2½ lin. longa. Stamina pollicaria. Legumen 1-2-pollicare, acutum, valvulis late et crassiuscule marginatis.—Brazil, *Sello*, *Pohl*, *Langsdorff*, probably from the mining districts.

47. C. *Gardneri* (sp. n,), humilis, caule foliisque glaberrimis, stipulis parvis lanceolato-setaceis, pinnis bijugis distantibus elongatis, foliolis multijugis oblongis obliquis, valde inæquilateris coriaceis venosis, pedunculis elongatis, calyce glabriusculo obtuse dentato corolla tomentosa triplo breviore. — Pinnæ 3-4-pollicares, petiolo communi 1-1½-pollicari. Foliola 3-4 lin. longa. Flores ut in sequentibus ampli, speciosi. Corollæ semipollicares, tomento brevi subsericeo indutæ.—Province of Goyaz, Brazil, *Gardner*, n. 3703.

48. C. *abbreviata* (sp. n.), ramulis petiolisque pilosis v. demum glabratis, pinnis bijugis, foliolis multijugis ovato-oblongis obliquis falcatis valde inæquilateris, stipulis lanceolatis persistentibus, pedunculis petiolo brevioribus apice bracteatis, floribus hirsutissimis, calyce truncato corolla dimidio breviore.—Forte C. *macrocephalæ* varietas; pinnæ tamen in speciminibus suppetentibus omnes bijugæ, foliola majora, capitula minora.—Province of Piauhy, Brasil, *Gardner*, n. 2556.

*** *Pinnis quadri pluri-jugis, rarius subtrijugis. Capitula sæpe breviter fasciculato-racemosa.*

49. C. *macrocephala* (Benth. in Hook. Journ. Bot. 2, p.

140), ramulis petiolisque pilosis, stipulis lanceolatis persistentibus, pinnis distantibus 3-7-jugis, foliolis multijugis ovato-oblongis obliquis falcatis valde inæquilateris, pedunculis petiolo brevioribus apice bracteatis, floribus rufo-hirsutissimis, calyce truncato corolla dimidio breviore.—Fruticulus humilis. Petioli communes 3-5 poll., partiales 2-3 poll. longi. Foliola 3-5 lin. longa. Pedunculi crassi, rufo-hispidi. Corollæ 5 lin. longæ, profunde 5-fidæ. Stamina plus 2 poll. longa. Ovarium villosum. Legumen non vidi.——Brazil, *Sello, Pohl*; province of Goyaz, *Gardner*, n. 3129.

β. *foliolosa*, pinnis 7-9-jugis, foliolis minoribus.—Brazil, *Sello.*

50. C. *dysantha* (Benth. in l. c. p. 138), ramulis angulatis pubescentibus, stipulis lanceolatis persistentibus, pinnis 4-6-jugis, foliolis multijugis falcato-oblongis rigidis coriaceis subtus pubescentibus, bracteis late ovato-lanceolatis, capitulis subsessilibus interrupte fasciculato-spicatis, floribus hirsutissimis, legumine crasse sublignoso hirsutissimo. — Brazil, province of Minas Geraes, *Sello, Claussen.*

51. C. *viscidula* (sp. n.), ramulis subteretibus petiolisque hirsutissimis, stipulis ovatis deciduis, pinnis 3-5-jugis, foliolis multijugis falcato-oblongis ciliatis, bracteis ovato lanceolatis, capitulis pedunculatis breviter fasciculato-racemosis, pedunculis bracteolisque glutinoso-villosis, calycibus 5-fidis corolla apice hirsutissima vix brevioribus.—Folia fere C. *dysanthæ*, petioli communes breviores, foliola sæpius angustiora, 4-5 lin. longa. Pedunculi semipollicares. Bracteolæ numerosæ, fusco-membranaceæ. Calix 4 lin. longus. Ovarium villosum. Legumen non vidi.—Brazil, Serra Jacobina, *Blanchet* n. 2620.

52. C. *turbinata* (sp. n.), ramulis teretibus petiolisque pubescentibus, stipulis lanceolatis persistentibus, pinnis 8-12-jugis, foliolis multijugis falcato-oblongis rigidulis ciliatis, bracteis ovato-lanceolatis, capitulis breviter pedunculatis fasciculato-racemosis, floribus breviter pedicellatis hirsutissi-

mis, calycibus turbinatis 5-fidis corolla brevioribus.—Habitu C. *dysanthæ* affinis, foliolorum forma et calycibus distincta. Flores in capitulo 8-10, exteriores breviter pedicellati, pedicello rarius calycem æquante, interior sessilis, difformis. Corolla 4-4½ lin. longa. Ovarium villosum. Legumen non vidi.—Matto grosso, *Manso*, *Lhotsky*.

53. C. *foliolosa* (sp. n.), ramulis petiolisque pilosis, stipulis oblongis, pinnis 5-9-jugis, foliolis multijugis linearibus acutiusculis junioribus subtus pilosis, calyce corolla dimidio breviore, legumine sublignoso crasso dense villoso.—Arbor parva. Stipulæ 6-7 lin. longæ, membranaceæ. Folia fere C. *bellæ*. Flores ampli.—Brazil, *Sello*, near Formigas in Minas Geraes, *Gardner*, n. 4525.

54. C. *bella*, ramulis petiolisque tomentoso-puberulis, stipulis parvis lanceolatis acutis, pinnis 12-15-jugis, foliolis multijugis linearibus acutis, capitulis breviter fasciculato-racemosis, pedunculis petiolo brevioribus, floribus subsessilibus, calycibus breviter dentatis corolla villosa triplo brevioribus.—*Acacia bella*, Martius herb. an Spreng.? Syst. 3, p. 141.—Stipulæ vix 2 lin. longæ. Petioli communes subtripollicares, partiales 1-1½ poll. longi. Foliola crebra, pleraque 2 lin. longa, supra nitidula. Pedunculi rigidi, sesquipollicares, uti flores rufo-villosi. Corollæ 3½ lin. longæ, limbo amplo. Stamina numerosissima, plus quam 2 poll. longa. Ovarium glabrum. Legumen ignotum.—Brazil, *Sello*; Villa nova de Almeida, *Martius*.

55. *C. microphylla* (Benth. in Hook. Journ. Bot. 2, p. 139), ramulis foliisque glabris v. vix puberulis, stipulis lineari-setaceis, pinnis 15-20-jugis, foliolis multijugis minimis oblongo-linearibus mucronulatis, pedunculis crassis petiolo brevioribus, floribus sessilibus, calyce campanulato minute 5-dentato corolla glabra triplo breviore, legumine lignoso velutino-villoso.—Stipulæ 2-4 lin. longæ. Petiolus communis 1½-2½ poll. longus. Pinnæ vix pollicares. Foliola 30-40 juga, imbricata, vix lineam longa. Corolla 4 lin. longa. Stamina ultrapollicaria. Legumen 3 poll. longum, 3-4 lin.

latum, acuminatum, basi longiuscule angustatum.—Brazil, *Sello, Claussen.*

56. C. *myriophylla* (sp. n.), ramulis foliisque junioribus sericeo-villosis demum glabrescentibus, stipulis lanceolatis acuminatis, pinnis 10-20-jugis, foliolis multijugis minutis oblongo-linearibus acutiusculis, pedunculis petiolo brevioribus, floribus sessilibus, calyce turbinato ore ciliato dentato corolla glabra plus dimidio breviore, legumine sublignoso glabro.—C. *microphyllæ* simillima; foliola adhuc minora, folia pedunculi et ramuli juniora pilis sericeis obtecta, flores minores, et ovarium uti legumen glaberrimum.—Brazil (Minas Geraes?), *Sello, Pohl, Miers.*

§. 5. *Racemosæ.* Pinnæ multijugæ. Foliola multijuga, parva (1-4 lin. longa). Capitula longe racemosa, pedunculis brevibus sæpius fasciculatis. Filamenta purpurea.

57. C. *Houstoni* (Benth. in Hook. Journ. Bot. 2, p. 139), ramulis petiolisque ferrugineo-pubescentibus, stipulis parvis deciduis, pinnis 7-11-jugis, foliolis multijugis oblongo-linearibus subfalcatis, pedunculis brevibus longe racemosis v. inferioribus paucis axillaribus, pedicellis calyce brevioribus floribusque adpresso-hispidis, legumine crasso villosissimo.—*Acacia Houstoni* Willd. Spec. 4. p. 1062. Bot. Reg. t. 98. *Inga Houstoni,* DC. Prodr. 2, p. 442. *Acacia metrosideriflora* Schlecht? Linnæa, 12, p. 567.—Frutex orgyalis. Foliola 3-4 lin. longa. Racemus sæpe pedalis, basi foliatus v. omnino aphyllus. Corolla 4-5 lin. longa. Stamina numerosa, bipollicaria. Legumen 4-pollicare utrinque acutum.—Near Vera Cruz and Xalapa, *Willdenow, Schiede, Linden,* n. 677, *Galeotti,* n. 3315, &c.

58. C. *grandiflora* (Benth. l. c.), ramulis petiolisque ferrugineo-pubescentibus, stipulis lineari-lanceolatis deciduis, pinnis 15-20-jugis, foliolis multijugis parvis oblongo-linearibus obtusiusculis, pedunculis brevibus longe racemosis, pedicellis brevissimis floribusque adpresso-hispidis, legumine crasso villosissimo.—*Acacia grandiflora* Willd. Spec. 4, p. 1074. *Inga anomala* DC. Prodr. 2, p. 442, exparte. *Acacia callis-*

temon, Schlecht? Linnæa 12, p. 568.—A. C. *Kunthii* differt imprimis floribus subsessilibus minus hirsutis et racemo sepius aphyllo, a C. *Houstoni* foliis, iis C. Kunthii simillimis. —Mexico, *Bates*, *Mackenzie* &c., near Toluca, *Andrieux*, *n.* 406.

59. C. *Kunthii* (Benth. l. c.), ramulis petiolisque ferrugineo-pubescentibus, stipulis lanceolatis deciduis, pinnis 15-24-jugis, foliolis multijugis parvis oblongo-linearibus obtusiusculis, pedunculis brevibus longe racemosis inferioribus axillaribus, pedicellis calyce longioribus floribusque adpresso-hispidis, legumine crasso villosissimo. — *Inga anomala*, Kunth, Mim. p. 70 t. 22. *I. anomala β pedicellata*, DC. Prodr. 2, p. 442.—Foliola quam in C. *Houstonia* multo numerosiora, dimidio minora.—Mexico, near Pazcuaro and on the Jorullo mountain, *Humboldt and Bonpland*, near Tlalpuxahua, *J. G. Graham.*

60. C. *parviflora* (sp. n.), ramulis petiolisque adpresse pubescentibus, stipulis inferioribus lanceolatis superioribus setaceis, pinnis 12-15-jugis, foliolis multijugis minimis linearibus mucronulatis, panicula terminali gracili polycephala, capitulis minimis paucifloris, floribus sessilibus, calyce dentato corolla dimidio breviore, legumine lignoso puberulo.—Species distinctissima, habitu *Mimosæ microcephalæ* similis, floribus et legumine diversissima. Frutex elegans, ramosissimus. Stipulæ 1-3 lin. longæ. Folia iis C. *microphyllæ* et C. *myriophyllæ* similia, foliolis creberrimis vix lineam longis. Racemi graciles, 3-4-pollicares, aphylli, ad apices ramulorum et in axillis supremis in paniculam foliatam dispositi. Pedunculi 2-4 lin. longi, filiformes, fasciculati, bracteis stipulæformibus suffulti. Capitula 3-10 flora. Corollæ vix lineam longæ. Stamina pauca (10-12) basi monadelpha, purpurea, corolla subtriplo longiora. Legumen breviter stipitatum 2-½ poll. longum, 4 lin. latum.—Brazil (Minas Geraes?), *Sello*, *Pohl*, *Claussen*, *Langsdorff.*

Inga fasciculata, Willd. Spec. 4, p. 1022, is probably also a *Calliandra.*

(To be continued.)

BOTANICAL INFORMATION.

Sertum Plantarum; *or, Drawings and Descriptions of Rare or Undescribed Plants, from the Author's Herbarium; by* H. B. Fielding, Esq., F.L.S. & R.G.S.; *assisted by* George Gardner, F.L.S., *and Superintendent of the Royal Botanic Gardens, Ceylon.*

Mr. Fielding is laudably engaged in making known to the botanical world some of the treasures of one of the most extensive herbaria that was ever formed by a private individual; and, under the title of Sertum Plantarum, there has already appeared an octavo fasciculus, with twenty-five plates executed in lithography, from the pencil of a member of his own family, representing entirely new or very little known plants, accompanied by analyses where considered necessary, and a page of descriptive matter to each. The size and general execution of the work are similar to what is adopted in Hooker's *Icones Plantarum*, and the subjects, being entirely different from those there given, the book ought to find a place in every botanical library in the kingdom and upon the continent. The majority of the plants in the present fasciculus consists of the novelties collected in Brazil by Mr. Gardner, whose assistance, as announced in the title, is on that account the more valuable; others are from Swan River, Peru, Chili, Mexico, &c.; and we have reason to know that a second fasciculus is nearly ready for publication, which will contain equally interesting subjects. It is announced that the *Sertum Plantarum* will be completed in four Parts; but we trust that the public-spirited author may be induced to carry it on to a much greater extent. Every working botanist is conscious of the value of this and similar publications.

MIGUEL, *Sertum Exoticum.*

Similar in character and utility to the *Sertum Plantarum* of Fielding, and to the *Icones Plantarum* of Hooker, is the *Sertum Exoticum* of Fred. Aub. Guil. Miguel, a botanist of Leyden, already advantageously known by his "Observationes de Piperaceis et Melastomaceis," accompanied by excellent plates and analyses in folio. The present work is upon a smaller size, quarto, but equally valuable as regards the plates and descriptions. It is destined to contain figures and descriptions of new or little known species, and is announced to appear, from time to time, in numbers, each containing five plates, with accompanying text, at the price of five francs a number. The Dutch Herbaria will no doubt afford ample materials for such a publication, which we trust will meet with the encouragement it deserves. The first number alone has yet reached our hands, and the plates in lithography, and descriptions are equally carefully executed. The species are, *Selaginella Poeppigiana*, Spreng.; *Scleria Künthii*, Mig.; *Phytolacca Bogotensis*, H. B. K.; *Ionidium viscidulum*, H. B. K. (from Surinam specimens); and *Cissampelos canescens*, Mig., from Mexico.

JOHNSON, *Iter Plantarum, &c.*

Mr. Pamplin is about to reprint, with some remarks and notes, an exceedingly scarce little pamphlet, of which, so far as he knows, there is not another copy than the one which is now being transcribed from, in existence. It is entitled:

JOHNSON (THOMAS), *Iter plantarum investigationis ergo susceptum à decim Sociis in agrum Cantianum*, Anno Dom. 1629, Julii 13.

Ericetum Hampstedianum s. plantarum ibi crescentium observatio habita, Anno Eodem, 1 Augusti.

Descriptio itineris plantarum investigationis ergo suscepti in agrum Cantianum, Anno Dom. 1632, *et enumeratio planta-*

rum in Ericeto Hampstediano locisque vicinis crescentium, (Londini) 1632.

Of the "Iter" and the "Ericetum Hampstedianum," it would seem, from Dryander's valuable Catalogue of the Banksian Library, that the original M.S. (only) is in that collection (now of course in the British Museum); and it is further remarked "In Museo Britannico adest exemplar impressum, 2 plagularum, in 4to.," from which latter no doubt this reprint will be made. Of the portion of the pamphlet called "Descriptio, &c." it appears that a printed copy exists in the Banksian Library; for besides the date it is added, "Pagg. 39, cum figuris ligno incisis 5, quarum 3 priores redeunt in ejus editione herbarii Gerardi, pag. 1570 et 2 posteriores ibidem, p. 37."

We may observe that it is the same Dr. Thomas Johnson whose name is commemorated by Mr. Brown in the beautiful *Johnsonia lupulina* of New Holland. Besides being the editor of the second edition of Gerarde's Herbal in 1633, he was author of two other pamphlets, enumerated in the *Catal. Biblioth. Banks.*, under the titles of "Mercurius Botanicus, sive plantarum gratia suscepti itineris, anno 1634, descriptio. Lond. 1634, 8, pp. 78," and "Mercurii botanici pars altera, sive plantarum gratia suscepti itineris in *Cambriam* descriptio, exhibens reliquarum stirpium nostratium (quæ in priore parte non enumerabantur) catalogum. pp. 37." He is said to have been killed while fighting in the royal cause in September, 1644.

De Candolle's *Prodromus*.

We are daily expecting to receive the eighth volume of De Candolle's Prodromus Syst. Nat. Regni Vegetabilis, which, as is well known, since the lamented death of its illustrious author, has been continued by his talented and only surviving son. It had been announced for November of last year, but we are not aware that, if then published, any copies have yet (February 1844) reached this country. "M. Alphonse De Candolle," we learn from a recent announcement, "author of a part of the seventh volume, and honourably known by many botanical works, now devotes himself to the continuation of this noble undertaking. He works with the advantage of materials, in books and herbaria, even more complete than those which were available to his father, all whose notes and MS. he possesses; among which are many portions quite finished and ready for the *Prodromus;* and he stands forward, aided by numerous fellow-labourers, whose names are a guarantee for their entire success. The *Prodromus* is no mere compilation; it is a work accomplished by the examination of plants themselves, and a diligent study of the species. The plan improves as it proceeds. Henceforth each family, confided to a single botanist, may be looked upon in the light of a *Monograph.* The specific characters are to be fuller than in the preceding volumes, and a few lines of description, following the synonyms, will contain all the particulars which aid in defining the species. This more detailed plan, of course, requires greater labour and longer time; but thanks to the number of botanists and the unanimity of views in the several fellow-workers, we quite believe that the remaining volumes will appear more quickly than did the earlier ones."

"The eighth volume may convey some idea of what the book will be in future. It contains the following families:—

Lentibularinæ, by M. Alphonse De Candolle; *Primulaceæ*, by M. Duby; *Myrsineæ*, *Ægiceraceæ*, *Theophrasteæ*, *Sapotaceæ*, *Ebenaceæ*, and *Styraceæ*, by M. Alphonse De Candolle. The *Oleaceæ* and *Jasmineæ* are the work of the late Professor A. Pyrame De Candolle. *Apocyneæ*, by M. Alphonse De Candolle, and *Asclepiadeæ* by M. Decaisne.

The ninth volume, now in the press, and to be published in August 1844, includes:

Loganiaceæ, by the late Professor De Candolle; *Gentianeæ*, by M. Grisebach; *Bignoniaceæ*, *Cyrtandreæ*, and *Sesameæ*, by the late Professor De Candolle; *Hydrophylleæ*, by M. Alphonse De Candolle; *Polemoniaceæ*, by Mr. George Bentham; *Convolvulaceæ*, by M. Choisy; and *Boragineæ*, by the late Professor De Candolle.

The tenth volume will consist almost entirely of two families, the *Solaneæ*, by M. Dunal, author of the Monograph on *Solanum;* and the *Personatæ* or *Scrophularinæ*, which Mr. Bentham is now describing from a rich collection of materials.

For the eleventh, twelfth, and succeeding volumes, M. Alphonse De Candolle has secured many distinguished cooperators, among whom we may mention Mr. Bentham for the *Labiatæ*, Nees ab Esenbeck for the *Acanthaceæ*, M. Decaisne for the *Plantagineæ*, M. Moquin-Tandon for the *Amaranthaceæ* and *Chenopodeæ*, M. Meisner for the *Polygoneæ*, *Proteaceæ*, and *Begoniaceæ*. The previous labours of these gentlemen, and the ample resources at their disposal, leave no manner of doubt that the articles furnished by them will be the result of extensive and varied research."

Those who do not already possess this inestimable work will be glad to know that the cost of the whole seven volumes has been reduced from one hundred and seventeen to seventy-eight francs, and each volume will, in future, be sold separately at thirteen francs. The utility of this book is increased by the publication of an Index in one volume octavo, by Dr. Buek (Berlin); but it is unfortunately in two parts: the first part, containing the Index to the four first volumes, was published in 1842; the second, containing that of volumes five, six, and the first section of volume seven, bears date 1840. The second edition of the admirable "Nomenclator Botanicus" of Steudel (in which 78,000 species are enumerated, and their synonyms given,—Stuttgard and Tubingen, 1840,) constitutes, however, a far better index to the work of De Candolle, inasmuch as it refers to the whole of the seven volumes, and is an uninterrupted alphabetical arrangement.

WALPERS' *Repertorium Botanices Systematicæ.*

In connexion with the "Prodromus" of De Candolle, we have the pleasure of announcing the completion of the second volume of *Walpers' Repertorium*; a work, the scope and object of which were explained in the fourth volume of the "Journal of Botany," p. 206. The author follows, most judiciously, the exact arrangement of De Candolle, of which his work may be considered a Supplement. He copies the characters of the species published by different writers since the appearance of the volumes of the "Prodromus," and he refers to descriptions and figures: so that his book, arranged typographically with the seven volumes of the "Prodromus," displays, in conjunction with them, a complete view of what is known of about one half of the vegetable kingdom. The fourth part of the second volume terminates with the *Monotropeæ*, the last Order in the "Prodromus:" and, that nothing may be wanting of all that is known to the date of publication, (November, 1843,) a further Supplement is given, including species of the several Orders from *Ranunculaceæ* to *Gesneriaceæ*, which have appeared during the progress of the work from 1842: and so great are our acquisitions in that period, due especially to the labours of Boissier, Jaubert and Spach, Fenzl, Meisner, Bentham, Torrey and Gray, &c., &c., that one hundred and fifty-six closely printed pages are occupied by this first Supplement. An Index of the Genera and their synonyms concludes the second volume.

ENDLICHER'S *Genera Plantarum.*

This laborious and important work, appreciated by every botanist, was commenced in 1836, and the volume, a mine of useful knowledge, was completed in 1840. Since that period three supplementary numbers have been published of new Genera; or corrections of, and additions to, those previously published. The third of these, now before us, is valuable in another point of view, for it contains an arrangement of all the known *Algæ*; the Genera with their characters, and a Catalogue of Species, with reference to descriptions and figures, and an alphabetical Index of all Algological writers. We trust the author may be induced to treat the other Cryptogamic Orders with the same masterly hand.

SCHNIZLEIN, *Iconographia Familiarum Naturalium Regni Vegetabilis, &c.* Bonn, 1843.

During the course of the publication of his "Genera Plantarum," Endlicher commenced a series of botanical plates illustrative of those Genera, under the title of "*Iconographia Generum Plantarum*, Vienna, 1838;" and whether the drawings and analyses were executed by the magic hand of Ferdinand Bauer, or by "Zehner," or "Putterlich" (names which some of the plates bear), they are alike honourable to the artists and to the author. Nothing more perfect of the kind has ever appeared in any age or country; and it was a matter of deep regret with us, that, owing probably to the heavy expense attending the execution of such plates, and a limited sale, the work was discontinued at the conclusion of the first volume (in quarto, with one hundred and twenty-five plates, engraved in outline, a little shaded, uncoloured). The place of this is endeavoured to be supplied by Dr. Schnizlein, who has announced his "*Iconographia Familiarum Naturalium Regni Vegetabilis* delineata, atque adjectis familiarum characteribus adnotationibusque variis tum scientiam tum usum spectantibus exornata." The object of the work is stated to be the Illustration of *all* the *families* of the vegetable kingdom, by one or more figures of each, with dissections; taking Endlicher principally as the authority for such families. The number of these is estimated at about three hundred and thirty, and each will be so represented that the whole can be arranged, previous to binding, according to the views and wishes of the possessor. The European examples will, whenever it is practicable, be taken from original drawings after nature ; the rest, it is acknowledged, must be borrowed, and carefully selected from the most approved works, but not without a thorough revision. Such figures will appear as shall not only illustrate the botanical character, but exhibit the aspect and appearance of the entire plant ; they are to be partially coloured, and a preference will always be assigned to useful and officinal species, if they are sufficiently characteristic. The number of plates is intended to be three hundred and sixty ; to be accompanied with text, giving the distinctive character of the family in Latin and German, and short observations on the essential and other characters, as well as a summary of the species. The work is to appear in Parts, each of twenty Plates, quarto, and, as much as possible, in systematic order, or at least in such a manner that one or more entire groups will be completed in each. The author assures us that the materials are for the most part prepared, and that, unless from some unforeseen obstacle occurring, there will be nothing to hinder the publication of three or four Parts (sixty or eighty Plates) annually.

Such a work has been long a great desideratum ; and, judging from the execution of the two first Parts, which are now before us, it is every way worthy of encouragement ; while the very moderate price (two rix-dollars per Part) does not preclude botanists, even of limited income, from being purchasers. The Cryptogamic plates are very beautiful. In the two Parts which have appeared, examples of the following families are given. Part I. *Diatomaceæ, Nostochinæ, Confervaceæ, Characeæ, Ulvaceæ, Florideæ, Lichenes, Gymnomycetes, Hyphomycetes, Gasteromycetes, Pyrenomycetes, Hymenomycetes, Cycadeæ, Gilliesiaceæ, Hæmodoraceæ,* (and *Vellozieæ*), *Aquilarineæ, Nepentheæ, Sapotaceæ, Lardizabaleæ, Schizandraceæ, Reaumuriaceæ, Burseraceæ.*—Part II. *Hepaticæ, Musci, Equisetaceæ, Polypodiaceæ, Hymenophylleæ, Gleicheniaceæ, Schizæaceæ, Osmundaceæ, Marattiaceæ, Ophioglosseæ, Salviniaceæ, Marsileaceæ, Isoteæ, Lycopodiaceæ, Balanophoreæ, Cytineæ, Rafflesiaceæ.*

JAUBERT *et* SPACH, *Illustrationes Plantarum Orientalium.*

In the last volume of this Journal we noticed the four first Livraisons of this valuable work, and then gave some account of the nature and object of the publication. The work proceeds with undiminished merit, and we have before us as far as the eighth Livraison; the 7th has not yet reached our hands.

We gave a list of the plates, as far as Tab. XL, *Diserneston gummiferum,* J. and S.; which we observed was a very remarkable umbelliferous plant, to be described in the forthcoming Livraison. It proves to be one of the principal plants, if not the only one, that yields Gum Ammoniacum of commerce, and was detected in Southern Persia by Aucher-Eloy (some of whose specimens are in our Herbarium). "Ainsi," the author remarks, "se trouve en partie éclairci le doute qui a régné jusqu'à présent à cet égard. Olivier avait dit (vol. ii, p. 189, de son Voyage) que la Gomme Ammoniaque s'obtient par incision d'une espèce de *Ferula,* qui croit spontanément dans les déserts de la Libye, en Arabie, *à l'est et au sud de la Perse.* Aucher-Eloy, dans son Journal, précise les localités, et nous venons de les énumérer avec le même soin. A son premier passage sur la route d'Ispahan à Shiraz, en Janvier, 1838, il avait rencontré la plante en grande quantité, mais toutes les tiges étaient alors desséchées, et il lui avait été, disait-il, impossible de déterminer si elle appartenait au genre *Pastinaca* ou au *Ferula;* 'ce que je puis assurer d'avance,' ajouta-t-il, 'c'est que ce n'est pas le *Ferula orientalis.*' A son retour, le Juin de la même année, il fut plus heureux; après l'avoir rencontrée le 20 Juin, également desséchée, à Yezdikhast, il la trouva enfin à Maïar en très-bon état de fructification. D'après nos observations elle forme un genre aussi bien caractérisé que le sont la plupart de ceux de la même famille. Nous l'avons nommé *Diserneston,* (ou plante des deux Ernest,) en honneur de MM. Ernest Germain et Ernest Cosson, auteurs d'une Introduction à une *Flore analy-*

tique et descriptive des environs de Paris." This new genus the authors consider allied to *Siler* and *Agasyllis*; but it differs remarkably from both by the irregularity of its inflorescence; by the remarkable development and conformation of the disk; by the extreme tenuity of all the striæ or nerves of the pericarp; and also by the very slender resiniferous vittæ entirely buried under the epicarp. The genus *Agasyllis* is distinguished from *Diserneston* by its bladdery fruit. The authors regret that Aucher-Eloy has furnished no information respecting the mode of collecting the Gum ammoniacum; so that nothing further is known than that which is related by Olivier. The gum is spontaneously produced by simple exudation, forming little masses in the axils of the umbels. The quantity existing on the specimens is too small to render it possible to submit the substance to chemical analysis. Tab. 41 represents Vicia Aucherii, n. sp.; t. 42 A., Cicer pinnatifidum, n. sp. (under which a Conspectus Specierum is given); t. 42 B., C. pimpinellifolium, n. sp.; t. 43 A., C. Montbretii, n. sp.; t. 43 B., C. Songaricum, Steph.; t. 44. C. spiroceras, n. sp.; t. 45. C. tragacanthoides; t. 46. Pisum Aucherii, n. sp.; t. 47. Chesneya (Lindl. Legumin.) rytidosperma, n. sp.; t. 48. C. vaginalis, n. sp.; t. 49. Primula Aucherii, n. sp.; t. 50. Tetrapterygium (F. and M. Cruciferæ) stylophorum, J. and S. (glastifolium, Boiss.); t. 51. Eunomia Montbretii, n. sp.; t. 52. Hutchinsia chrysantha, n. sp.; t. 53. A., Meniocus grandiflorus, n. sp.; t. 53. B., M. filifolius, J. and S. (Alyssum meniocoides, Boiss.); t. 54. Quercus castaneæfolia, C. A. M.; t. 55. Q. Persica, n. sp.; t. 56. Q. Cypria, n. sp.; t. 57. A., Q. Trojana, n. sp.; t. 57. B., Q. calliprinos, Webb.

As soon as the 7th Livraison arrives we shall continue our notice; and shall now only further observe that the Maps are of the most beautiful description, exquisitely executed, and showing the routes of the different botanical travellers from the time of Rauwolf (1573) to the present day.

LINDENBERG, *Monographia Hepaticarum Generis Plagiochilæ. Bonn,* 1844.

This is a very beautiful work, illustrative of a section, or group, of the genus *Jungermannia,* of which our well-known *J. asplenioides* may be considered the type; and a very useful work too, if we could only bring ourselves to think that the numerous kinds here given were specifically different. It was with some hesitation that the writer of this notice, many years ago, added a few species to the group in question, then very limited, and which experience has shown to be liable to considerable variation. But here the species of *Plagiochila* are increased to ninety-six! The slightest change in the form of the leaf, the presence or absence or size of a tooth, direction of the foliage, and of the branches, the presence or absence of surculi, &c. &c., all and each are considered tokens of specific distinction, without taking into account the influence of soil, exposure and climate, for some or other of these plants are found in every quarter of the globe. On such slight foundations, no doubt the number might be still greatly augmented. Such at least is our opinion, and we cannot but fear that a great disservice is done to the cause of Botany by the prevalent mania for increasing the number of species on insufficient grounds. We see it evinced in the botany of our country and of Europe, where the study of plants is attended with advantages that ought to lead to different conclusions. In other respects, and as a series of figures, admirably, and no doubt faithfully delineated, accompanied by ably drawn up characters and descriptions, and by a geographical distribution of the supposed species, the work has our unqualified praise.

GRISEBACH, *Spicilegium Floræ Rumelicæ et Bithynicæ.*

The able author of the "Genera et Species Gentianearum"* is publishing an elaborate book under the above title,

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* See the notice of this work in Taylor's Annals of Nat. Hist. v. iii. p. 115.

"*exhibens Synopsin Plantarum quas æst.* 1839 *legit auctor*;—*accedunt species quas in eisdem terris lectas communicarunt Friedericksthal, Frivaldski, Pestalozza, vel plane descriptas reliquerunt Buxbaum, Forskol, Sibthorp, Sistini, alii,* vol. 1, Brunswig, 1843." The first volume is now before us, and it forms assuredly a most valuable addition to our knowledge of Eastern botany. The plan of the author and the object of his work are best explained in his own words:

"The theory of the laws of the distribution of plants over the earth, requires to be based upon detailed and varied observations. Systematic botanists of the present day have devoted themselves with more zeal than ever to investigations of this nature. As the circumstances relating to climate in Europe are best known, so, in the present state of geographical botany, observations on the distribution of plants over this portion of the earth must excite a greater interest, and at a time when the Flora of Northern Europe is almost exhausted, our researches are next directed to the Basin of the Mediterranean. In Italy, we see Bertoloni's history of plants almost half finished; Boissier's work on the vegetation of the south coast of Spain is received with unreserved acknowledgments; in Greece and Anatolia, numerous explorations have been made, which are partly published, partly prepared for publication; and lastly whatever has been observed with so much success in the southern provinces of the Russian Empire, including the labours of C. A. Meyer, Nordmann, &c., has been collected together in the Flora Rossica, commenced by Ledebour.

"Amidst so many endeavours to investigate the vegetable productions of South Europe and the adjoining countries, *European Turkey* alone remained till now almost neglected. Few travellers have penetrated the interior of Rumelia; and the botanical labours of those few have not been adequate, or they are not sufficiently published, to serve to elucidate the character of the relations between the Greek, the Taurian and the Dalmatian Floras, the transition between which lies to the south of the Danube.

"The Editor of the *Spicilegium Floræ Rumelicæ*, here announced, has succeeded in collecting from Macedonia, Thrace, and the adjoining provinces, more than 2,000 species of plants. A careful systematic working up of these materials is his present object; and his book is not merely confined to the description of new species, which form about the twentieth part of the whole collections, but it will include a careful comparison with the collection of allied Floras, while a more accurate circumscription of the limits of each species will be attempted by new and precise Diagnoses. Preparations for the publication of a "Synopsis Plantarum Europæ," on which the author has for years been engaged, and in which he hopes to see himself farther supported by the communication of rare S. European species from the friends of science, have facilitated to him the subject and they insure to the work a more general as well as a purely geographical interest.

"The *Spicilegium* contains a complete enumeration of all the plants which have been observed in the Turkish territory between the Danube and the kingdom of Greece. Those forms which the author has not himself examined are to be mentioned, at least by name, as will be more fully explained in the preface. In the following Parts, the collections of Aucher-Eloy, so far as these were made in the Rumelian territory will be frequently quoted.

"The extent of the work, which, on account of the Diagnoses, is in the Latin language, is estimated at fifty to sixty sheets octavo. The first volume contains the polypetalous families; the second, the remainder. In the arrangement, Endlicher's Genera Plantarum is taken as the basis. Each Volume will be published in three parts, of which the first is sent herewith and the second is printed. If it should hereafter appear possible to figure the new species, the Plates will appear in Decades, in a separate work, so that the price of the *Spicilegium* may be precisely estimated from that of the first Part.

"A. GRISEBACH."

To the above, the publisher has only to add that the *Spicilegium Floræ Rumelicæ et Bithynicæ* is in two Volumes, each of the thickness of twenty-five to thirty sheets, and published in Parts of ten to twelve sheets each.

The price of each Part is 1 th. 8 gr.; and the parts will follow each other so closely that the completion of the work may be expected in a twelvemonth.

LEDEBOUR, *Flora Rossica.*

So vast a work as a Flora of all the Russias could scarcely be confided to abler hands than those of the author of the "Flora Altaica" and of the splendid "Illustrations" of the same Flora. The first volume, accompanied by a Geographical Map, is already out, extending to the end of *Leguminosæ* (following the arrangement of De Candolle). It is entirely in Latin, with generic and specific characters, and a very full list of synonyms and habitats. Of the vastness of this undertaking some idea may be formed by an enumeration of the regions which it will include, as defined by Dr. Ledebour.

A. *Cis-Ural portion of the Empire.*

1. ARCTIC RUSSIA, or European Russia beyond the Arctic Circle.

2. NORTHERN RUSSIA; south from the same circle, to where the Oak appears.

3. MIDDLE RUSSIA; from the southern limits of the latter region to where the Vines are cultivated.

4. SOUTHERN RUSSIA; the whole country from thence to the southern limits of the Empire; but this again is divided into

5. TAURIA; the Taurian peninsula, and

6. CAUCASUS, or the great district occupied by the Caucasians, of which the northern limits extend to 45° N.; on the west, to the mouths of the Kuban, and on the east to where the Kuma flows into the Caspian Sea.

B. *Trans-Ural portion of the Empire.*

7. URALIAN SIBERIA, lying to the east of the Ural Mountains, and including the countries watered by the lower Irtusch and the Ob.

8. ALTAIC SIBERIA.

9. BAIKALIAN SIBERIA; the southern part of which comprises in itself a peculiar region, called

10. DAHURIA.

11. EASTERN SIBERIA; extending thence to the Sea of Okhotsk.

12. The country of the TSCHECKSTSCHENS.

13. ARCTIC SIBERIA; or the northern boundary of Siberia to the sea within the Arctic Circle.

14. KAMTSCHATKA.

15. ISLANDS of the EASTERN OCEAN, (Aleutian, &c.)

16. RUSSIA IN AMERICA.

Such is the extent of country, the vegetation of which Dr. Ledebour has undertaken to describe, under the title of *Flora Rossica, sive Enumeratio Plantarum in Imperii Rossici provinciis Europæis, Asiaticis et Americanis hucusque observatorum:* a country that possesses many points of interesting comparison with that of North America,* both in regard to extent and nature of vegetation.

Voyage au Pole Sud et dans l'Océanie.—Botanique, par HOMBRON *et* JACQUINOT (*La Phanérogamie*) *Chirurgiens de l'Expédition; et* MONTAGNE (*La Cryptogamie*), *large fol. Paris.*

The general results of the last voyage of the lamented Admiral d'Urville towards the South Pole, in the "Astrolabe" and the "Zélée," during the years 1837—40, have been already given to the public; and already numerous Fasciculi of Plates of the scenery and natural history of the Expedition have appeared, executed in a style alike creditable to those who conducted the voyage, and to the French nation. But although these have come under our observation, I am not aware that any text is published with them, or has reached this country.* I have seen none, save an 8vo. sheet of text upon the *Algæ* of the voyage, entitled "Prodromus Generum Specierumque Phycearum novarum in itin. ad Polum antarcticum collectarum" &c., by Dr. Montagne.

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* The Flora of North America, by Messrs. Torrey and Gray, our readers will be glad to know has extended to the 3rd part of vol. ii, which includes the *Compositæ*.

Our object, on the present occasion, is to give a brief notice of the plates in the *Partie Botanique*, of which six livraisons are before us, each containing five plates, of an atlas folio size, executed in line engraving, with a degree of luxury wholly unknown in the annals of the Voyages of the British nation, but which unfortunately prevents their being so widely useful, by the necessarily high price. D'Urville, as is well known, was not only an able commander of a nautical expedition, but a very good botanist; and his Floras of "the Ægean Sea" and of the "Falkland Islands," have been long before the public. Had he lived, he would probably have undertaken the botany of the present voyage himself, as well as the account of the personal narrative. Under existing circumstances, the publication of the Plants has been committed to the gentlemen whose names stand at the head of this notice; and we trust that descriptions will soon appear of the phanerogamic plants. The first of the plates at Tab. 1 of the Dicotyledonous plants, is *Agalmanthus umbellata*, a myrtaceous plant from Lord Auckland's group, closely allied to *Metrosideros*. Tab. 2 is a splendid Araliaceous plant from the same country, *Aralia polaris* (an appellation the species scarcely merits, seeing that the Auckland Islands are no nearer the South Pole than the Land's End of England is to that of the North), with ample cordate or reniform, hispid leaves. Tab. 3, *Ligusticum apodum* (a more appropriate name) from the same country. Tab. 5, *Ozothamnus Vauvilliersii*, from ditto. Tab. 6, *Calucechinus antarctica* and *Calusparassus Forsteri*, (our old friends from the Straits of Magelhaen, *Fagus antarctica* and *Fagus Forsteri*, which it has surprised us not a little to see ranked under two new genera; the reasons for this change will doubtless be given in the text). Tab. 10 is devoted to the illustration of three *Compositæ* of the Straits of Magelhaen, *Senecio littoralis*, Gaud. (figured by us in Ic. Plant. tab. 493), *Homianthus echinulatus*, Cass. and *Clarionella Magellanica*, DC.

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* The wrapper of the last botanical Livraison announces that of the Partie Historique vols. 1 to 5 have appeared, and of the Atlas Pittoresque livraisons 1 to 31, Partie Zoologique livraisons 1 to 9, and Partie Physique vol. 1.

Tab. 1, of the Monocotyledonous plants, represents *Victoriperrea impavida* (N. O. Pandaneæ), a new genus, from Taiti. Tab. 2, *Freycinetia Urvilleana*, n. sp. from Vavao. Tab. 3, *Homcalathiphora*, Gaud. (N. O. Pandaneæ) from Salomon Isle. Tab. 1 of "Cryptogames" is devoted to three species of Asplenium, *A. apicedentatum*, n. sp., *A. obtusatum*, Forst. and *A. scleroprium*, n. sp., all from Auckland. Tab. 2 contains *Lomaria procera*, Spr., *Grammitis rigida*, n. sp. (too near *Gr. australis*), *Gr. australis*, Br., and *Gr. humilis*, n. sp., also too near *Gr. australis* (from Auckland). Tab. 3 has three *Asplenia*: *A. bulbiferum*, Forst., *A. laxum*, Br. (both from New Zealand), and *A.* (Cænopteris) *viviparum* (Isles Mascareignes). Tab. 3 bis, *Asplenium tremulum*, n. sp., Isles Mascareignes and New Zealand, and *A. Fabianum* (both of the *Darea* group), Bourbon. Tab. 4 represents *Polystichum proliferum* (Van Diemen's Land), Presl., *P. vestitum*, Presl, (New Zealand), and *Schizæa palmata*, n. sp., (from Auckland). May this not be the same with *S. australis*, Gaud.? from the Falkland Islands. Tab. 5, *Polystichum venustum*, n. sp. The rest of the plates are all devoted to the Algæ, so ably determined and characterized by Dr. Montagne, save one, which contains four *Jungermanniæ*, new species (belonging to three of the new modern genera), and also named by Montagne.

We are not aware of the nature or extent of the botanical collections made during this voyage; they are probably very considerable, as those of the American Exploring Expedition, undertaken about the same time and very much in the same regions, are said to be; and must, in conjunction with those made by the officers of Captain Ross's more recent Antarctic Voyage (of which there is some account in the 2nd vol. of this Journal, p. 247, etc.) go far towards completing our knowledge of the vegetation in the hitherto little explored countries of the southern hemisphere.*

Künze, *die Farrnkräuter*, *Leipzig*, 1840, 4*to*.

This work is a Supplement to that of the same name by Sckhuhr, generally quoted under the title of "Sckhuhr, Filices," a work familiar to every student of Ferns, and a very admirable publication, considering the period at which it was published, and the many difficulties under which its author laboured. The "Supplement," by the excellent Künze, is equally worthy of the present day and of its author, whose name ranks high for his labours among this tribe of plants.

* The amount of plants, collected by the United States' Exploring Expedition, is stated upon good authority in Silliman's Journal, vol. 44, p. 405, to be ten thousand species, and upwards of fifty thousand specimens. The following is a list of the number of species collected at the several places visited.

Madeira	300	Fejee Islands	786
Cape de Verds	60	Coral Islands	29
Brazil	980	Sandwich Islands ..	883
Rio Negro (Patagonia) ..	150	Oregon	1218
Tierra del Fuego	220	California	519
Chili	442	Manilla	381
Peru	820	Singapore	80
Tahiti	288	Mindanao	102
Samoa (Navigator's Islands)	457	Sooloo Islands	58
N. S. Wales	787	Mangsi Islands	80
New Zealand	398	Cape of Good Hope ..	300
Auckland Islands ..	50	St. Helena	20
Tongatabu .. .	236		
			9646

His "*Analecta Pteridographica, seu Descriptio et Illustratio Filicum, aut novarum, aut minus cognitarum*," in a thin volume folio, with thirty well executed plates, displays great and judicious knowledge of the Ferns, and a mind not disposed to be led astray by too great a desire to multiply genera and species. His descriptions also evince a thorough knowledge of his subject, and an intimate acquaintance with books which treat on ferns. We have from the same pen an account of all the ferns discovered by Pœppig in South America, under the title of "*Synopsis Plantarum Cryptogamicarum*," &c. and those of Drège, Ecklon and Zeyher, detected in South Africa. These labours have rendered him peculiarly fitted for the work in question, of which six Fasciculi are published, each with ten coloured plates, representing species either altogether new, or such as have not been figured by Sckhuhr. The specific characters are in Latin, the full descriptions and remarks in German. The work seems to come out at very uncertain intervals, but we trust nothing will prevent the author from completing so truly useful a labour.

KÜNZE, *Riedgraser* (*Carices*).

What Künze's work, entitled "*Farrnkräuter*," is to Sckhuhr's Ferns, the present publication is to the well known *Carices* of Sckhuhr—a *Supplement*; and as may be supposed, it is marked, equally with that, by a very great improvement in the execution of the plates, and also in the descriptive matter. This is published too, like its prototype, in an 8vo. form, with one or more species, (coloured), on a plate; and we possess three Parts, including thirty plates and their specific characters in Latin, and descriptions and remarks in German.

BATEMAN'S *Orchidaceæ of Guatemala and Mexico, in one vol. imperial folio. London*, 1843.

LINDLEY'S *Sertum Orchidaceum, in one vol. folio. London*, 1843.

We may speak of the beauty and *luxe* of foreign publications on natural history, aided, as they often are, by government patronage and pecuniary grants; but they are far outvied by the taste and liberality displayed by private individuals in our own country, as is most strikingly evinced in the two works now under our notice; works, which commencing nearly at the same time, we, in an early number of our Journal, noticed in conjunction, and now, though it is some time since their completion, again speak of together; and can with truth say that no botanical publication in this or any country boasts of more splendid subjects for the pencil, better executed figures, or more satisfactory descriptions. That of Dr. Lindley contains forty-nine plates of Orchidaceæ, and a frontispiece of other species, formed into a most graceful "*wreath;*" while that of Mr. Bateman contains forty plates, together with many beautiful illustrations of scenery or some natural or artificial object in the form of vignettes, which have reference to the botanical figures.

BENTHAM, *Botany of the Voyage of H.M.S. Sulphur, under the command of Capt. Sir E. Belcher, R.N., during the years* 1836-42; *edited and superintended by R. B. Hinds, Esq. Surgeon, R.N., attached to the Expedition.*

Her Majesty's ship Sulphur was sent out on a surveying voyage to the Pacific Ocean, and finally to the western shores of America, under the command of Captain Beechey, R.N. who invalided home, and was succeeded by Captain Belcher. The well-known taste of both these distinguished officers for natural history, in general, would naturally lead to the conclusion that botany would be encouraged on such an interesting voyage; and besides the services of a collector, Mr. Barclay, sent out by the Royal Botanic Gardens of Kew, two of the officers, Mr. Hinds and Dr. Sinclair, distinguished themselves by their ardour in pursuit of plants, and by the observations they made on their discoveries. Many of the plants gathered by the latter of these two gentlemen, were published in the "Botany of Captain Beechey's Voyage;" and upon the return of the Expedition in 1840, after having visited various parts of Western America, from Guatemala to lat. 60° 21″ north, and various islands in the Pacific, in the Indian Ocean, and China, the charge of publishing the Natural History of the Voyage was confided to Mr. Hinds, and a liberal grant made by government to aid in the expenses. Of the Botany, the general remarks and the notes on the geographical distribution, are from the pen of that gentleman, while the botanical descriptions are by Mr. Bentham, a name which will at once stamp the publication as of no ordinary merit. The plants first passed under review are those of North-West America and California, on both which countries are some very interesting observations by Mr. Hinds, which preface the systematic portion. This commences with the species of California; previously described ones are merely mentioned, and a reference made to some work where the characters may be found. The new species, (which are considerable, especially from the Bay of Magdalena), are characterized and described, and figures given of the most remarkable, from delineations made on stone by Miss Drake, whose taste and skill in botanical drawing are beyond praise. The first number, which has just appeared, and contains 16 pages, extends as far as *Paronychiaceæ* of the Californian plants; and these are accompanied by ten plates. 1, *Krameria parvifolia*, n. sp. 2, *Ionidium fruticulosum*. 3, *Hibiscus* (Bombicella), *denudatus*, n. sp. 4, *Jamesia Californica*, n. sp. 5, *Cardiospermum tortuosum*, n. sp. 5, *Galphimia angustifolia*, n. sp. 6, *Cardiospermum tortuosum*, n. sp. 7, *Elaphrium rheifolium*, n. sp. 8, *E. Hindsianum*, n. sp. 9, *Schinus ? discolor*, n. sp. 10, *Dalea ramosissima*.

It is calculated that the whole of the Botany will be comprised in six Parts, to appear quarterly, each containing three sheets of letter-press and ten Plates.

HOOKER, *Species Filicum, or descriptions of all known Ferns.*

Mr. Pamplin has undertaken the publication, in English, of what appears to the Author to have been long a desideratum in this country, an account of all known Ferns, both such as are described in books, and which exist in his own extensive collections, systematically arranged. Of the difficulties attending the satisfactory execution of such a work, no one is more conscious than the writer; but the subject having for very many years engaged his attention, especially while occupied in the publication of the "*Genera Filicum*," he does not shrink from the task; and the public will judge how far it merits their approbation. The first Part, in 8vo., consisting of 64 pages of letter-press, and twenty lithographic Plates (two or more subjects being generally represented on a Plate), of new or imperfectly known Ferns, and such as are not previously figured,—has already appeared. The general arrangement followed, but with considerable modifications, is that of Presl in his Tentamen Pteridographiæ,[*] as being the completest and perhaps in most frequent use of any that has yet appeared; but the Author by no means assents to the establishment of the numerous Genera contained in that work, and in the otherwise valuable Synopsis of Mr. J. Smith, given in the early volumes of this Journal. The introduction of the *venation* into our systematic characters, by no one insisted on with more force and truth than by Mr. Brown,[†] is of the utmost importance in systematic arrangement, and constitutes a new era in the study of this family of plants; but we are not thence to infer that the slightest variation in the direction, or union, or some other circumstance in the veins, is therefore to constitute a mark of generic distinction. The generic importance of the venation is indeed a matter of great difficulty, and I am far from having the vanity to suppose that I have hit upon the correct medium between the placing too little or too much dependence upon the ramification of the veins. In proportion, however, as we advance in our knowledge of the ferns, we shall be able to set a more just estimate upon the importance of venation. The subject is yet in its infancy.

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[*] Of which a sketch is given at the close of the "Genera Filicum."

[†] See his profound remarks on this subject, in Horsfield's Flora of Java, and in Wallich's work.

The first Part of the *Species Filicum* contains the genera and species of *Gleicheniaceæ*, distinguished as a sub-order from *Polypodiaceæ*; and of the latter, the *Cyatheæ* and part of *Dicksonieæ* are given. It will be seen, that the genera have mostly very considerable additions made to them; but the author has still to regret a long catalogue of dubious species, which, in consequence of inefficient descriptions, and in the absence of authentic specimens, he is quite unable to determine. Most of them, probably, belong to well-known species. The second Part of the work, which is in a state of great forwardness, is to contain the continuation of the *Dicksonieæ*, in which will be included those most beautiful and delicate of all known Ferns, the extensive genera *Hymenophyllum* and *Trichomanes*; and these are already elaborated by the author.

HOOKER'S *Icones Plantarum.*

This work has met with a degree of success, for a publication of the kind, beyond the author's or the publisher's (Mr. Baillière) expectations. The first Part of the third Volume of the New Series (or seventh volume of the entire work) appeared on the first of January, and contains TABS. DCI.—DCL. with their accompanying descriptions. So extensive a series of figures of new or little known plants, has never been published in this or any other country. The present Number is rich in species from Australia and New Zealand; and there are many remarkable forms among them. We may particularly mention the *Beech Trees* of New Zealand, of which four new species are known to the author: the remarkable *Scytanthus* (Stapelia) *Gordoni* and *S. Currori*, the latter from tropical Africa. *Aciphylla squarrosa* and 4 *Stenopetala*,* *Rhodoplexia Preissii*, Harv. Several *Ferns*, recently described in the "Species Filicum:" *Pholisma arenarium*, Nutt.; two *Gentians* from New Zealand, *Cabomba Piauhiensis*, Gardn., and *Caroliniana; Apodanthes Calliandræ*, Gardn. (N. O. Rafflesiaceæ); *Schiedea Nuttallii*, *&c.*

A History of the BRITISH FRESH-WATER ALGÆ, *by* ARTHUR HILL HASSALL, *Surgeon.*

Mr. Hassall is well known for his researches among the *fresh-water Algæ*, and we rejoice to find that he has prepared materials for a work on these beautiful objects, which cannot fail to be acceptable to the lover of Cryptogamic Botany, and indeed to all who take an interest in the works of nature. We have seen a large proportion of the drawings, and we do not hesitate to say that they are eminently adapted to illustrate, in the most satisfactory manner, the structure and mode of reproduction of these curious aquatics. The work will very shortly appear in one volume octavo, with seventy plates, executed in lithography by the author, representing the magnified appearance of every species of the orders of *Confervaceæ* and *Diatomaceæ*, hitherto discovered inhabiting the soft waters of the British Isles. It will contain, in about three hundred pages of letter-press, a complete account of the modes of reproduction, growth, vitality, distribution, uses, classification and species of this extensive and interesting group of plants; interesting from the importance and number of the physiological and anatomical facts connected with their history. Not less than four-fifths of the species to be here described, are considered by the author as either new or such as have not been described in any systematic work on the *Algæ* hitherto published; this considerable increase in the number of the species showing plainly the very imperfect state in which this department of Botany has been allowed to remain, a condition from which it is hoped that it will be rescued by the present work, which the author flatters himself will place the knowledge of the *fresh-water Algæ* upon a footing as satisfactory as that on which other and higher departments of the vegetable kingdom rest. The author earnestly solicits the correspondence of all such persons as may be engaged in the study of the *Algæ*, and are anxious either to communicate or receive information respecting those that inhabit the fresh-water; and he requests that those who are favourably disposed to the work, and are desirous of subscribing to it, will make known their intentions to him at his residence, Addison-road North, Notting-hill, near London.

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* One of these, the *S. draboides*, Tab. 617, seems to be the *Menkea australis*, briefly characterized by Lehmann, in his Catal. Semin. of the present year, and raised from seeds sent by Mr. Preiss from the Swan river settlement.

Information respecting Botanical Travellers and Collectors.

The Editor has much interesting information on this subject to communicate; but a press of other matter and of valuable papers communicated by distinguished Botanists precludes the introducing much of it now. A little space must, however, be devoted to this subject.

DRUMMOND'S *Swan River Plants.*

This day, Feb. 8, letters have arrived from our valuable correspondent, Mr. Drummond, at the Swan River, who is still engaged in discovering new plants in that remarkable country, many of which have been brought by the same vessel that conveyed the letter, though they have not yet come to hand. His letter contains some singular Mosses, allied to the *Phasca* of Europe in appearance; but we have not had time to examine them. No one has a better eye for the Mosses than Mr. Drummond; and many novelties in this department may be confidently expected from him.

We may observe, that of the thirteen sets of one thousand species of Swan River plants, lately sent home by Mr. Drummond for sale, as announced in vol. i. p. 397, only two remain undisposed of.

MR. GARDNER, *in Ceylon.*

The Botanical world will hear with pleasure that Lord Stanley has appointed Mr. Gardner to the charge of the Botanic Gardens at Kandy, Ceylon, vacant by the recent death of Mr. Normansell; and we are sure, from his zeal and acquirements, that we may soon hope to see a Flora of that fertile island from his pen. He left England for Ceylon in September of last year, 1843.

MR. WM. GARDINER'S *Scottish Plants.*

Mr. William Gardiner, a most intelligent Botanist of Dundee, is indefatigable in his researches among the rich alpine district of Braemar, as well as throughout Forfarshire and the neighbouring country, rendered classical by the researches of Don and Drummond; the results of his researches he offers for sale, at the following excessively moderate prices:

First set,	containing	1000	specimens	£4
Second	,,	500	,,	£2
Third	,,	250	,,	£1.

These collections consist of carefully selected, dried, named, and localized Scottish phænogamic and cryptogamic plants, including as many distinct species as possible, and of the rarer kinds, chiefly collected in the alpine district of Braemar; and in order to afford more information respecting the localities, than the labels accompanying the specimens can convey, it is also proposed to publish, in the form of a pamphlet, "*Botanical Rambles in Braemar, in* 1844," to be sold for one shilling. Various localities on the sea-coast of Forfarshire, in the interior and elsewhere, intended to be botanically visited, will be noticed in an appendix.

We are well acquainted with Mr. Gardiner's specimens, and can confidently recommend them as beautifully preserved and correctly named. Indeed it is wonderful how, at the low price he has fixed upon his plants, he can possibly make the preparation of them answer his purpose: but the explanation is perhaps found in his own words in a letter lately addressed to the writer of this notice. "Should the specimens be such as to merit your approval, your recommendation of them would be of great service to me in procuring subscribers for next season's collections; for it is still my intention to devote a portion of one or two seasons more to this employment. By these means I trust I may be instrumental in extending and cherishing a taste for our favourite science; and such a result would be the most gratifying reward for my humble labours."

Those who are disposed to encourage so deserving a Naturalist, may send their orders directly to himself, at No. 40, Overgate, Dundee.

Botanical Collections of North-West America.

We take much pleasure in announcing that three enterprizing Botanists are engaged in exploring the most interesting portions of the *Far West,* and that their collections of dried plants will be offered to subscribers, in sets, as they come to hand. Two of these collectors, Mr. Charles A. Geyer, well-known as formerly the botanist of Mr. Nicollet's official north-western expedition, and Mr. Lüders, who are for the present attached to Sir Wm. Stewart's party, have by this time reached the Rocky Mountains. The particular field of Mr. Geyer's operations, and the extent of his journey, were undecided at the time of his departure from St. Louis. Mr. Lüders expects to spend next winter, and perhaps the ensuing summer, at a station of some Roman Catholic missionaries on the upper waters of Lewis and Clarke's, or Great Snake River. These botanists, being well acquainted with the vegetation of the general Valley of the Mississippi and of the lower Missouri, will doubtless avoid the common and better known plants of this region; and thus their collections may be expected to prove unusually choice and valuable.

The third collector, Dr. Lindheimer, a very assiduous botanist, intends to devote a few years to the exploration of Texas; and he pledges himself to exclude from his sets all the common plants of the south-western United States.

These several collections will be assorted and distributed, and for the most part ticketed, by Dr. Engelmann of St. Louis; assisted, where it is necessary, by the authors of the Flora of North America, who promise to determine the plants, so far at least as they belong to families published in that work; and for the information of subscribers, particular notices of the *centuria* offered for sale, will probably appear in Silliman's N. American Journal as they come to hand. The number of sets being limited, earlier subscribers will receive a preference. The three explorers are entirely independent of each other; and their collections are to be separately subscribed for.

The price of the Rocky Mountain collections of Geyer, or of Lüders, is fixed at ten dollars (or two guineas) per hundred; that of Dr. Lindheimer's Texian collections at eight dollars (or £1 13s. 6d. sterling) per hundred; payable on delivery of the sets at St. Louis, Missouri, by Dr. George Engelmann; at New York, by Wiley and Putnam, 161, Broadway, and Stationers' Hall Court, London; and Professor A. Gray, of Harvard University, Cambridge, Massachusetts, to any of whom subscribers may address themselves (post paid) by mail. The additional expense of transportation, doubtless trifling in amount, will be charged upon the sets deliverable in London.

The writer of this notice (Dr. A. Gray) cheerfully states that the dried specimens made by these botanists, which have fallen under his observation, are well selected, very complete, and finely prepared; and he cordially joins Dr. Engelmann in recommending the enterprize to the patronage of botanists.

For the purpose of obtaining some immediate pecuniary aid in the prosecution of his present arduous undertaking, Mr. Geyer also offers for sale, through the parties abovementioned, a selection from his collections of the last year in

Illinois and Missouri; consisting of twenty sets of one hundred and fifty species of plants, which are offered at six dollars per set.

Description and Figure of a New Species of OXALIS *from Columbia, by* W. J. H.

TABS. I, II.

Among many fine plants gathered in Columbia by Mr. William Lobb, while on a botanical mission in South America on account of Mr. Veitch, is the very singular *Oxalis* here represented; and which may be thus described.

OXALIS (§ *Biophytum*) LINDSÆÆFOLIA. *Hook.*

Fruticosa, caule erecto simplici apice folioso, foliis abrupte pinnatis multijugis brevi-petiolatis, foliolis oblongis oblique cuspidato-acuminatis costatis oblique venosis, stipite rachique costatis, pedunculis axillaribus, capitulis multifloris densis globosis, bracteis e lata basi subulatis rigidis, sepalis lanceolato-acuminatis, petalorum unguibus in tubum connatis, filamentis longioribus stylos longe superantibus, radice fusiformi.

HAB. Columbia. *William Lobb, n.* 35.

This appears to be a very distinct species from any hitherto published; but evidently allied to the *Oxalis* (*Biophytum*) *sensitiva, L.* Here, however, the root is long, stout, fusiform, or scarcely branched, sending out a few fibres; the upper part rises into a short, erect, simple stem, 2-4 inches long, more or less scarred with the remains of fallen leaf-stalks, and crowned with a tuft of leaves 6-8 or more inches long, pinnated with from 14-18 opposite or alternate pairs of oblong, oblique, and sharply acute leaflets, costate, truncate at the base, marked with numerous oblique nerves, glabrous, an inch to an inch and a half long. Petioles short, and with the rachis downy, tipped with a subulate point. Peduncles axillary, 2-3 inches long, downy, bearing a globose head of dense, bracteated flowers. Bracteas rigid, subulate, with a broad base. Sepals lanceolate, acuminate, striated. Petals with the claws united for their whole length into a funnel-shaped tube; the limb of 5 oblong-oval, spreading segments. Stamens 10, monadelphous, 5 short, 5 very long and more exterior, subulate, longer than the styles, slightly downy. Anthers oval. Germen roundish-ovate glabrous, seated on a thickened stipes. Styles 5, long. Stigmas capitate.

TABS. I, II. *Fig.* 1, Flower; *f.* 2, 3, Bracteas; *f.* 4, Corolla. *f.* 5, Stamens and pistil; *f.* 6. Pistil:—*magnified.*

Description, with a Figure of HYOBANCHE SANGUINEA. *Thunb., by* W. H. HARVEY, ESQ.

(TAB. III.)

(The accompanying description and figure of this very beautiful plant would perhaps not have appeared in these pages, if previous to the Plate having been prepared, we had been aware of the excellent one recently given in Endlicher's "Iconographia Generum Plantarum." As, however, Mr. Harvey possessed the great advantage of drawing up his account, and making his delineation from the recent plant, I have the less hesitation in still laying them before the public.—ED.)

HYOBANCHE. *Thunb.*

GEN. CHAR. *Calyx* bibracteate at the base, unequally 5-cleft. *Sepals* linear-spathulate, the two anterior separate nearly to their base, the others united for more than one-third of their length. *Corolla* clavate, slightly curved, vaulted, with a very narrow oblique mouth; limb obsolete, its segments minute and tooth-like. *Stamens* 4, of nearly equal length, inserted in pairs near the base of the corolla (almost as long); *filaments* glabrous; *anthers* (by abortion) 1-celled, adnate to the expanded apex of the filament: margins of the cell involute. *Ovary* 2-celled, ovate: *placentæ* 2 in each cell, fleshy, in the axis; *ovules* very numerous; *styles* filiform; *stigma* clavato-linear, drooping. *Capsule* subglobose, fleshy;

finally deliquescing! *Seeds* invested with a fleshy cellular arillus (as in the Order) globose, very minute. *Harvey.*

HYOBANCHE SANGUINEA. *Linn. Mant. p.* 253. *Thunb. Fl. Cap. (ed. Schult.) p.* 488. *Harv. Gen. of S. Afr. Pl. p.* 249.

OROBANCHE MAURITANICA. *Pet. Gen. t.* 37, *f.* 4.

HAB. Parasitical on various roots, and found in several parts of the flats at the Cape of Good Hope, in the months of September and October.

The only species of the genus. A curious fleshy plant. Stem thick, a foot or more in length, but the greater part buried underground, closely covered with ovate appressed scales. Spike of flowers dense, ovate. Whole plant of a more or less intense carmine, and thickly clothed with short woolly hairs. This genus is usually placed in *Orobancheæ*, but the structure of the ovary is so completely analagous to that of *Harveya*, which Sir W. J. Hooker has referred to the *Scrophularinæ*, that I do not see how they can be separated. It is true that the placentæ, strictly speaking, are here formed from the introflexed margins of the valves; but then they meet in the centre of the capsule, and are firmly united together into one central piece; a line at right angles with the dissepiment merely remaining to mark where the surfaces coalesce. But after all, the distinctions between parietal and central placentæ, appear very trifling, as, theoretically, all placentæ have the same origin; and a *central* placenta only differs from a parietal in the greater degree of inflexion of the margins of the carpel. Had not a celebrated Botanist* lately declared that the *Orobancheæ* were more nearly allied to the *Gentianæ* than to the *Scrophularinæ*, I should have been inclined to have combined them with the latter Order, and to have considered the passage easy and natural, through the genera *Hyobanche*, *Harveya*, *Aulaya*, and *Alectra*.—*Harv.* in "*Gen. of S. Afr. Pl.*"

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* Professor Lindley at the Meeting of the British Association, Liverpool, 1837, as reported in the Liverpool Mercury, Sept. 22.

TAB. III. HYOBANCHE COCCINEA. *Fig.* 1, Calyx, with bracteas ; *f.* 2, Flower, with its 2 bracteas, front view ; *f.* 3, Corolla, side view ; *f.* 4, The same laid open, showing the stamens (all *nat. size*) ; *f.* 5, Anther, *magnified*; *f.* 6, Pistil, *nat. size*; *f.* 7, Transverse section of ovary, *magnified.*

Description, with a Figure, of a New Species of THUJA, *the* ALERSE *of Chili, by* W. J. H.

(TAB. IV.)

Travellers who visit the various towns on the Pacific side of South America, speak of the quantity of timber imported from the south of Chili, especially in the form of *shingles*, under the name of *Alerse* or *Alerze*, a tree I believe hitherto unknown to botanists. The fullest account of it that has come in my way is that of Captain King in the "Voyage of the Adventure and the Beagle," vol. i. p. 282, where he says: "The *Alerse* found near Chilóe, is of better quality than that which comes from Concepcion ; it is brought in 'tablones' or planks, 7 or 8 feet long, 2 inches thick, and 9 or 10 inches wide ; and as it splits readily, it is also seen in boards of half that size, the latter being the principal articles of barter.

"The *Alerse* grows in great quantities near Calbuco, but at such a distance from the beach that it cannot be conveyed thither for embarkation, except in the above form. The tree is felled and squared, and then hewn with the axe into as many logs of 7 or 8 feet long as it will afford, and these, with the assistance of iron wedges, are split into planks and boards ; in which state, without being farther trimmed, they are tied together in bundles and carried on men's backs, or dragged over the ground to the beach.

"The extraordinary straightness of grain in this tree, enables the natives to split it, so as to make it appear as if it had been dressed with an adze, or even with a plane ; but, as I have said, the axe is the only instrument used. So great is the difficulty of procuring a spar of this wood, that when I wished to obtain a new mast for the Adelaide, I offered four times the value of an *Alerse* spar to the natives, besides the assistance of twenty men and tackles, &c. to assist in conveying it to the shore. The temptation was almost too strong to be withstood; but the man to whom I applied, who had before been employed to get masts for a schooner in the Chilian service, and a flag-staff for the town, assured me that it would take his own party two months to bring one to the beach; with the assistance of our people, however, it might be done in a month. The trees were distant, and there were two or three ridges of hills to cross, that would cause much delay. The facility with which these people handle timber, was a sufficient proof to me that such a task, if refused by them, must be very difficult indeed, and I gave it up; as the Yntendente was so obliging as to give me the flag-staff which had taken the same party two months to procure.

"The 'Hoxsley,' a national schooner, built at Chilóe for the government, was masted with *Alerse* spars, which proved to be very strong.

"*Alerse* is used principally for the floors, partitions, and weather-boards of houses, and also for shingling the roof, for which latter purpose it is peculiarly superior and durable; after exposure to weather it turns blue and looks like slate. It does not shrink or warp, and though brittle, is of close grain, and well adapted for furniture. From this wood the country-people make staves for casks; and the bark of the tree serves to caulk the seams of vessels, for which it answers remarkably well, being exceedingly durable when constantly wet, though it quickly decays, if exposed to the sun and air.

"Spars of *Alerse*, 80 or 90 feet long, may be procured, and from eight hundred to one thousand boards are frequently obtained from a single tree; I was told even so many as one thousand five hundred out of one trunk. *Alerse* is found on the Island of Chilóe, but not of any size; it is also common in the Straits of Magelhaen, in all those parts west of Cape Froward: but from the poverty of the soil it is of very stunted growth."

To the above information given by Captain King, a few notices are added by Captain Fitzroy, as to the mode in which the *Alerse* is obtained. "The forests of *Alerse* are like mines to the Calbucano, or native, and nothing but old age or accident can check him from making boards after he has had one season of good luck. A man and his wife, if industrious, and if their fortune has led them to find plenty of fine-grained straight trees, at not more than the usual distance, three to five miles from the sea, can cut and bring down five hundred boards in a month. The place where the trees are felled is called an *Astillero.* Here, on the flanks of the Cordillera, the pair will work for four or five weeks, then go home and clean their potatoe-grounds and attend to domestic matters, till their feet heal and a paralytic motion of the legs, acquired in the Astillero, has ceased. When quite refreshed they return for another cargo, and work till their feet and limbs can stand it no longer. A third trip is afterwards made by the husband for a fortnight to a nearer Astillero, where he cuts pieces of timber and plank (*tablones* and *cuartones*) as large as he can carry, and then goes home to collect his harvest, make chicha, and sow corn for next year. As soon as the children can walk a few miles, their parents take them to the Astillero, and beginning with half-boards to carry, the load is increased as they grow stronger. At about sixteen they borrow an axe, and make the boards they afterwards carry. The profitable parts of the forest are now, of course, much farther from the sea than they were, owing to constant thinning. To get a load of twenty boards twice as much labour is necessary as was required for the purpose thirty years ago. The largest *Alerse* tree that has been found by any Calbucano, during the last forty years, measured 30 feet in girth at 5 feet from the ground, and more than 76 feet to the first branches. This famous trunk gave eight lengths of boards and half a length. The two largest individuals seen by Mr. Douglas in his excursion for me, measured, respectively, 24 and 22 feet round, at 5 feet from the ground: but they were dead trees, nor did he detect any above 10 feet in circumference that were quite sound. Report, however, says, that in the Cordillera, out of reach of the Calbuco woodsmen, there are enormous *Alerses*, from 30 to 40 feet round, and 80 to 90 feet in height to the first branches; above which the heads of these giants are said to rise some 40 or 50 feet more. The *Alerse* has short stout boughs, and leaves resembling those of a Pine in their bluish-green hue, but shorter, being only half an inch, and the twentieth of an inch wide: on each stem there are four rows of these small leaves at opposite sides. In carrying the load of boards from the Astillero to the nearest water conveyance, the native wears a sheepskin on his shoulder under a woollen shirt, and taking a stick, with its lower end forked, to steady him across the frequent bridges of single trees thrown over the ravines, he trudges away with the load on one shoulder, and on the other the stick, which partly supports the weight of the burthen till one shoulder is tired, when he shifts it to the other and goes on. This half-rest is called *cantantun*. After eight, ten, or a dozen of these transfers, according to his strength and the state of the road, he casts down his burthen and rests a few minutes; this is his *descanso*, and he indulges himself thus at about every two or three miles. The Astillero of Melipulla is ten descansos, a whole day's journey, distant from the place of embarkation.

"In examining the different forests of *Alerse*, Mr. Douglas noticed some immense landslips, quechi (earth*quakes ?*), one which was said to have brought down one thousand *Alerses* of great size. This landslip measured nearly half a mile long, and half a quarter of a mile in width."

In my Herbarium is deposited a specimen of a *Thuja* with immature fruit, gathered by Captain King in the Straits of Magelhaen; and on my showing this to Mr. Bridges, on his recent return from Chili, he immediately pronounced it to be the true *Alerse*, and promised to send me a specimen of the same plant which he gathered in the "mountains near the Bay of Valdivia," but which, being barren, he had not thought worth distributing with his Valdivian collections. He has kept his promise, and I find the species to be identical with that gathered by Captain King, who, indeed, as above stated, speaks of it as a native of the Straits of Magelhaen as well as of South Chili. This, which I can no where find described by any author, I now proceed to define under the name of

THUJA TETRAGONA;

Excelsa ramosissima, ramulis brevibus erectis subfasciculatis distichis, foliis dense imbricatis exacte quadrifariis uniformibus ovatis obtusis carinatis concavis sub-cymbiformibus, fructu terminali erecto ovato quadrivalvi, valvis inæqualibus, 2 exterioribus triplo minoribus, omnibus spina infra apicem ovata valvam superante. (TAB. IV.)

HAB. South Chili on the mainland, and in the Straits of Magelhaen, probably only on the north side. *Captains King* and *Fitzroy*. *Mr. Darwin*. Mountains near the Bay of Valdivia: also abundant on the mainland in front of the islands of the Archipelago of Chili. *Mr. Bridges*.

This is spoken of as a lofty tree, some particulars of the dimensions of which are given above. In the older cylindrical branches, where the diameter is about as thick or thicker than a goose-quill, there are no leaves, but occasionally scars whence they have fallen, and loose, thin, brown bark, which easily separates from the wood in flakes. On these thicker portions of older branches, leafy only towards the extremities, are set, in a very irregular and crowded manner, numerous short fasciculated branches or branchlets, leafy to the base, pinnated with distichous, moderately spreading, alternate, simple, or divided branchlets, which are densely clothed with imbricated leaves, regularly quadrifarious, so that the branchlets, taken in conjunction with the leaves, are regularly tetragonous, with the angles acute. These leaves are small, scarcely 2 lines long, ovate, moderately spreading, close (rarely, in some specimens, lax), ovate, rather obtuse, carinated on the back, especially towards the point, within canaliculate. Such leaves as do remain on the older and rounded branches are often twice the size of these, broadly ovate, acuminate, appressed to the bark, withered (especially the lower ones), and, owing to the spreading of the bark, with the increased size of the branch, set apart from each other, not imbricating. Only one of my specimens possesses any fruit, the one from the Straits of Magelhaen, and that a solitary and immature terminal oval capsule or strobilus. Two or three of the leaves immediately below it are elongated, and the fruit itself would appear to be formed of four terminal leaves thus elongated and linear, of which the bases are singularly enlarged and dilated (upwards as well as laterally), forming the four coriaceous or almost woody valves of the fruit, two inner ones large and oval, the two other and outer ones smaller and oblong; the apex of the leaf thus converted remains in the form of an incurved spine, inserted below the apex of the valves. The fruit being a solitary one and immature, I have not ventured to destroy it for the sake of inspecting the seeds.

The species, indeed, is a very distinct one in its characters, and undoubtedly of the genus *Thuja*. Yet there is described by Mr. Don, from the Lambertian Herbarium, gathered "by Mr. Middleton at Cape Horn," a Juniper, *J. uvifera* Lamb. Pin.; "foliis ovatis obtusis appressis quadrifariam imbricatis, ramulis congestis," etc., and, were it not that the fruit is described as that of a true Juniper, I should consider the two plants to be the same.

TAB. IV. Thuja tetragona; *f.* 1, immature fruit, magnified.

Enumeration of the MOSSES *and* HEPATICÆ, *collected in Brazil by* GEORGE GARDNER, ESQ., *drawn up by* SIR W. J. HOOKER, *and* W. WILSON, ESQ.

To those who know the magnitude of Mr. Gardner's collection of phænogamous plants in Brazil, and how fully his time must have been occupied, it will not be matter of surprise that the following list of Mosses, comprising little more than one hundred species, is not more extensive. Had our traveller been less select in his choice of specimens, or if he had gathered them with a view to ascertain the relative geographic distribution of species, there is no doubt that a much greater number would have been included. Nine species were found near Pernambuco, seven in the province of Ceará, five in Piauhy, and, with the exception of a few others gathered in Minas Geraes, the rest were obtained in the neighbourhood of Rio Janeiro, chiefly on the Corcovado, and on the Organ Mountains (attaining the altitude of 7,000 feet) and a few were found in the wet valleys. Limited as is this number, many species are included which are not named in the "Flora Brasiliensis" of Endlicher and Martius, where 193 species are described.

(After the number of the specimen in the collections, is given another number in a parenthesis (1, 2, or 3) which indicates the three different arrivals in which the specimens were distributed).

1. Andræa *rupestris, Linn. var. acutifolia.* Summit of the Organ Mountains.

Barren. Perhaps a distinct species, with lanceolate acute leaves, spreading on all sides of the stem, incurved at the summit, texture closer than in *A. rupestris*; but after the examination of many specimens of *A. rupestris,* it does not appear that falcate leaves are a constant character; hence A. *alpina, var. gracilis* of Swartz may rather be referred hither.

2. Anictangium ? *coronatum, nov. sp.*

Repens; ramis simplicibus confertis brevibus erectis, foliis patulis confertis concavis rotundo-ovatis brevissime acuminatis enervibus integerrimis siccitate appressis, perichætialibus elongatis erectis, capsula perichætio immersa oblonga annulo magno persistente (peristomium simulante) coronata, calyptra mitriformi plicata, operculo . . . On stems of trees near Cachoeira, Province of Ceará. July, 1839.

Except as to the calyptra, this very curious moss differs much from *Orthotrichum.* The fructification is cladocarpous, terminating short ramuli. Leaves subsecund, pale green, with roundish rather large areolæ. It very much resembles the figure of *A.? Domingense*, Schwaegrichen, Suppl. t. 267, b.

3. Anictangium *torquatum, Hook. Musc. Exot. t.* 41. On trees, Serra de Santa Brida, Province of Goyaz. Feb. 1840.
4. Gymnostomum *Barbula. Schwaegr. Suppl. t.* 175. *var.* foliis patulis confertis spathulatis obtusis.—Growing with the last.
5. G. *Barbula,* foliis linearibus. Serra di Araripe, near Brejo Grande, province of Ceara. Feb. 1839.
6. G. *blandum, nov. sp.* Caule brevissimo, foliis confertis obovatis concavis obtusis integerrimis siccitate appressis, nervo subcontinuo, capsula oblongo-elliptica ore coarctato, operculo conico-rostrato.

On sandstone rocks, near the city of Oeiras. May 1839.

Considerably smaller than the preceding. Seta not one fourth of an inch long. Leaves firmer, erecto-patent. Annulus present. Operculum nearly as long as the capsule. Calyptra dimidiate, small.

7. G. (Physcomitrium) *Bonplandii, Humboldt.* Organ Mountains, on clay banks. Differs from an original specimen in the somewhat narrower leaves, which are more concave and less apiculate; the capsule is also narrower, *n.* 2, (2).
8. The same species, with broadly ovate leaves. Organ Mountains. April, 1837, *n.* 26, (2).
9. Hymenostomum *subglobosum, C. F. Hornschuch,* in "Flora Brasiliensis."

On a clay bank, Rio Comprido, July, 1837; and on an old wall in the Laranjeiras Valley. In the form of the capsule this differs considerably from all the European forms of the genus. *n.* 7, (3), *n.* 2, (1), and *n.* 27, (1).

10. Polytrichum *nigricans, nov. sp.* Caule erecto simplici, foliis erecto-patentibus lineari-lanceolatis acutis versus apicem serrulatis siccitate tortis, nervo lato lamellato, capsula ovata inclinata, operculo tenuirostro, calyptra glabra.

P. nigricans. MSS. in Gardner, Herb. Fl. Bras. Musci, No. 10.

On the Corcovado, near Rio de Janeiro, *n.* 18, (1).

Stem two inches long. Seta 1½ inch, and more. Capsule contracted at the mouth, more or less inclined. Operculum nearly the length of the capsule. Peristome with thirty-two very short whitish teeth. Calyptra slightly hairy at the apex. A taller moss than the rest, and the leaves more quickly expanding in water.

11. Polytrichum *Riedelianum, Montagne, Ann. Sc. Nat., vol.* 14. 2 Cent. No. 93. Province of Rio Janeiro.

12. P. *Magellanicum, Hedw. Sp. M. t.* 20. Common on clayey banks. Feb. 1837, *n.* 14, (2).

13. P. *Antillarum, Rich. Brid. n.* 29, (1).

P. appressum, Schwaegr. Suppl. t. 152. Corcovado.

14. P. *juniperinum, Hedw. Sp. M. t.* 18. Moist banks, Parahybuna.

14. b. Variety of the last, with leaves wide spreading and recurved. Serra de Piedades.

15. P. *Pennsylvanicum, Hedw. Sp. M. t.* 21. Clay bank. Tejuca. Nov. 1836.

15. b. The same. Moist banks. Parahybuna. Oct. 1840, *n.* 33, (1).

16. Barbula *cæspitosa, Schwaegr. Suppl. t.* 31.

B. cirrhosa, Bruch and Schimper, Bryol. Europ. fasc. 13—15, t. 11.

On rocks. Jurajuba Bay, 1837. *b.* ascent to the Pedra Bonita, Nov. 1836. *c.* on an exposed rock, *n.* 3, (3), *n.* 34 (1), and *n.* 10, (2).

17. Octoblepharum *albidum, Hedw. St. Crypt. vol.* 3, *t.* 6.

On the stems of Palms, near Pernambuco, 1837. *b.* on a decayed tree at the Ganea, 1836 (taller specimens), and Corcovado, more dwarfish, *n.* 9, (3), *n.* 9, (1).

18. Fissidens *Hornschuchii,* Montagne, in Annales, Sc. Nat. vol. 14, 2 Cent. No. 76.

F. serrulatus, Hornsch. in Flora Brasil. (Fl. Brasiliensis. Hornsch. MSS. !). Province of Goyaz.

19. Dicranum *parvulum, Hornsch. in Fl. Brasil.*

Weissia exigua, Schwaegr. Suppl. t. 179.

Dicranum debile, Wils. and Hook. Musci Americani. No. 51.

On the face of a moist rock, Corcovado. *b*, on dry bank, Tejuca. *c*, on clay bank. *d*, Parahybuna. Oct. 1840, *n.* 20, (1), *n.* 32, (1), *n.* 5, (2).

Perhaps this moss may prove to be only a diminutive state of *Dicranum densum*, Hook. Musc. Exot. t. 140, and it has much in common with *Weissia longirostris*, Schwaegr. Suppl. t. 117.

20. Dicranum *flexuosum*, var. *Hedw. Sp. M. t.* 38. On rocks, Serra de Araripe. Nov. 1838.

21. D. *longisetum, Hook. Musc. Exot. t.* 139. Summit of Organ Mountains.

22. D. *arctocarpum, Hornsch. in Fl. Bras.!* On decayed trunks of trees, in a shady wood. Feb. 1837. The seta of this moss is straight when moist, *n.* 19, (2).

23. D. *concolor, Hornsch. in Fl. Bras.!* (non Hooker, M. Exot. t. 138). Corcovado, *n.* 30, (1).

24. D. *filifolium, Hornsch. Fl. Bras.* Corcovado, *n.* 30, (1).

25. D. *penicillatum, Hornsch. Fl. Bras.!* On dry banks, Organ Mountains, *n.* 7, (2).

Described from barren specimens in Flora Brasiliensis. Ours have perfect fructification, showing all the characters of *Campylopus*, Brid.

26. D. *Guilleminianum, Montagne, Ann. Sc. Nat. vol.* 14. 2 Cent. No. 91.

On the face of a moist rock, Corcovado. Nearly allied to D. *vaginatum*, Hook. Musc. Exot. t. 141, *n.* 7, (1).

27. Holomitrium *crispulum, Hornsch. Fl. Bras.*

Didymodon tortuosum, Hornsch. MSS.!

D. longifolium, *id.*

Woods, Organ Mountains. *b*, Parahybuna, on stems of trees, Oct. 1840. *c*, on small trees, Jan. 1837, *n.* 17, (2).

28. H. *Olfersianum, Hornsch. in Fl Bras.*

Didymodon vaginatum, Hornsch. MSS.!

On the trunk of a tree, Praia Vermelha, *n.* 26, (1).

29. Trematodon *longicollis, Schwaegr. Suppl. t.* 120.

Moist rocks, Corcovado, *n.* 4, (1).

30. Leptostomum? *pusillum*, n. sp. Caule breviusculo, foliis imbricatis erectis ovato-lanceolatis acutis, nervo subcontinuo, capsula clavato-pyriformi nutante, operculo hemisphærico-apiculato brevi.

Summit of the Organ Mountains.

About one fourth of an inch high, and not unlike a small state of *Bryum polymorphum*, Br. and Sch., but the peristome wholly absent, and the inflorescence bisexual. In habit, this moss belongs to *Bryum*, but has also some resemblance to *Mielichoferia*. An annulus is present.

31. Bryum *acuminatum? Bruch, and Sch. Bryol. Europ.—var.* peristomio interno ciliis instructo. Summit of the Organ Mountains.

32. Brachymenium *Hornschuchianum, Hornsch. in Fl. Bras.*

Organ Mountains, on the trunk of an old tree. March, 1837. *b,* at the summit of the mountains, *n.* 25, (2).

33. Rhizogonium *æruginosum, nov. sp.* Caulibus simplicibus fasciculatis compressiusculis, foliis oblongo-lanceolatis nervo excurrente (perichætialibus ovatis acuminatis nervatis), capsula subcylindrica erecta, operculo conico-subulato incurviusculo.

On the stem of a tree-fern, Organ Mountains, *n.* 3, (2).

Stems half-an-inch high, or more, crowded, bearing the fructification at the base. Leaves of a light verdigris green, sub-erect, slightly denticulate at the apex, papillose, reticulation minutely granular. Perichætial leaves reddish, erect and appressed. Seta shorter than the stems. Capsules, when old, wide-mouthed. Operculum nearly as long. Calyptra dimidiate.

The specimens are not in a state to show the peristome, if there be any, in this moss. The foliage, as in *Schistostega*, is not easily wetted.

34. Bryum *argenteum, Linn.*

Rio Comprido, *n.* 19, (1).

35. B. *coronatum, Schwaegr. Suppl. t.* 71.

36. B. *cæspiticium, Linn. var. laxum.* Foliis dissitis patulis concaviusculis. Moist rocks, Corcovado, *n.* 5, (1).

Different from any British form of the species, but agreeing with it in too many characters to warrant its separation.

36. b. B. *capillare, var. cymbifolium.* Foliis dissitis ovato-oblongis basi patulis superne erecto-incurvatis concavis, capsula obconica.

Old walls, Arrayas, March, 1840.

It approaches to *B. obconicum* in the form of the capsule, which is of a deep red colour. Inflorescence dioicous. Possibly a distinct species.

36. c. B. *cæspiticium, var. β. gracilescens, Bruch, and Sch. Bryol. fasc.* 6-9, t. 35.

Serra de Araripe. Oct. 1838.

37. B. *erythrocarpum, Schwaegr. Suppl. t.* 70.

Clay bank, Organ Mountains, *n.* 11, (2).

38. Peromnion *radiculosum, Schwaegr. Suppl. t.* 250.

Summit of the Organ Mountains, at the foot of an old tree. Very few specimens, *n.* 23, (2).

39. Bryum *patens, nov. sp.*? caule ramoso, ramis brevibus inferne subnudis, foliis in rosulam congestis patulis obovatis subplanis apiculatis (margine plano) superne serrulatis, siccitate erectis subcrispatis, nervo sub-excurrente, capsula clavato-obovata cernua, operculo conico mammillato.

Rocks, Serra de Araripe. Oct. 1838.

In most of its characters very like *B. roseum,* but much smaller; capsules narrower, tapering into the seta, horizontal not pendulous, and the seta always solitary.

40. Mnium *Auberti, Schwaegr. Suppl. t.* 80. Corcovado, *n.* 17, (1).

41. M. *Beyrichianum, Hornsch. in Fl. Brasil.*

Summit of Organ Mountains.

42. M. *rostratum, Schwaegr. Suppl. t.* 79.

Organ Mountains, *n.* 5, (3).

43. Funaria *hygrometrica, Dill, n.* 6, (1).

44. Bartramia *uncinata, Schwaegr. Suppl. t.* 57.

Moist rocks. Corcovado, *n.* 3, (1).

45. B. *rufiflora, Hornsch. in Fl. Bras.*
Organ Mountains.

46. B. *filiformis, Hornsch. in Fl. Bras.*
Morro Velho. Moist banks. Oct. 1840.

47. Calymperes *Palisoti. Schwaegr. Suppl. t.* 98.
Pernambuco, June, 1838.

48. See No. 45. Mission of Duro, on trees. Oct. 1839.

49. Syrrophodon *Gaudichaudii, Montagne! Annal. Sc. Nat. N. S. v.* 2. *p.* 376. *t.* 16. *f.* 3.
Organ Mountains, on the stump of an old tree, April, 1837. *n.* 27. (2.)

50. S. *prolifer. Schwaegr. Suppl. t.* 180. *Hornsch. Fl. Bras.*
Serra de Natividade. Dec. 1839.

51. Macromitrium *nitidum. nov. sp.?* Caule repente fasciculatim ramoso, ramis brevibus erectis subsimplicibus, foliis patenti-incurvis lanceolato-subulatis integerrimis nervo continuo siccitate erectis crispatis, capsula ovata ore coarctato-plicato, calyptra lævi.

M. microstomum? Hornsch. in Fl. Bras. non Orthotrichum microstomum. Hook. et Grev. in Brewst. Journ. vol. 1. p. 114. pl. 4.

On trees. Serra de Jaquari. Sept. 1840.

Very nearly allied to *Orthotrichum microstomum, Hook. et Grev.* but that is a very robust species, with firmer papillose leaves, not glossy, and not incurved above. In our moss the leaves are yellowish, green and glossy, peristome with sixteen yellowish erect teeth, operculum half as long as the capsule, sporules large, olive brown.

52. The same. Morro Velho. Oct. 1840.

53. The same. On branches of *Vellozia candida.* Summit of the Pedra Bonita, Tejuca. Nov. 1836, *n.* 35, (1).

53. b. *var.?* foliis siccitate spiraliter seriatis et incurvis.
Organ Mountains.

54. M. *Didymodon. Schwaegr. Suppl. t.* 190.
Organ Mountains, on a large tree. March 1837, *n.* 24, (2).

55. M. *Richardi? Schwaegr. Suppl. t.* 173.
Stem of a tree. Corcovado. July, 1837, *n.* 8, (3).

56. M. *urceolato* affine. (Conf. Schwaegr. Suppl. t. 189).
Morro Velho. Oct. 1840, (barren specimens).
Repens, ramis elongatis parce ramulosis, foliis patenti-incurvis lanceolatis acutis (supremis apice attenuatis) serrulatis.

57. M. *filiforme. Schwaegr. Suppl. t.* 171.
On a dry rock. Corcovado. *b.* from the stem of a tree, *n.* 21, (1).

58. M. *apiculatum. Hook. Musc. Exot. t.* 45.
Organ Mountains, on trees. Feb. 1837, *n.* 16, (2).

59. var.? (barren specimens). Woods, Minas Geraes.

60. M. *Swainsoni. Musc. Exot. t.* 127.
Stems of trees. Arrayas. Province of Goyaz. March, 1840.

61. The same. Mission of Duro. Oct. 1839.

62. The same.

63. Sclotheimia *trichomitria. Schwaegr. Suppl. t.* 169.
Province of Rio.

64. S. *nitida, Schwaegr. Suppl. t.* 167.
Serra de Jaquari. Sept. 1840.

65. The same. Wood near Arrial das Merces, on trees, Oct. 1840.

66. S. *squarrosa ? Schwaegr. Suppl. t.* 56.
Stem of a tree, Morro Velho. Sept. 1840.

66. b. variety of *S. nitida*? See No. 64. Morro Velho. Oct. 1840.

66. c. S. *squarrosa*?—On trees, Parahybuna. Oct. 1840.

67. The same?—On a tree near Pajol.

68. S. *rugifolia, Hook. Musc. Exot. t.* 128.
Serra de Araripe, on trees. Feb. 1839.

68. b. The same. At the root of an old tree, Praia Vermelha, *n.* 25, (1).

69. S. *Jamesoni, Schwaegr. Suppl. t.* 202, *a.*
Face of a rock, Corcovado, *n.* 24, (1).

70. S. *cirrhosa, Schwaegr. Suppl. t.* 201, *a. Hedw. Sp. M. t.* 5, *n.* 31, (1).

71. S. *tecta, nov. sp.*; caule repente, ramis fastigiato-ramulosis erectis, foliis confertis erectiusculis lanceolatis acutis subintegris carinatis siccitate appressis et subtortilibus (nervo subcontinuo), perichætialibus longioribus rugosis

nervo excurrente, capsula immersa subsessili, operculo conico-acuminato, calyptra mitriformi basi quadrifida apice scabra.

Organ Mountains. On the trunk of a tree. *b.* Arrial das Merces. One inch and more in height, leaves subserrulate, reddish-brown, reticulation dotted; outer peristome reddish, inner of the same colour, composed of thirty-two filiform processes.

72. Fabronia *polycarpa, Hook. Musc. Exot. t.* 3.

On the stem of a large palm-tree, near Pernambuco, 1837.

72. b. The same. Near Bahia. Sept. 1837. *c.* Corcovado, *n.* 10, (3), 6, (3), and 23, (1).

73. Pterogonium *urceolatum? Schwaegr. Suppl. t.* 110.

Var. foliis magis lanceolatis, secundis.

Woods of Minas Geraes. Specimens scanty and imperfect.

74. Antitrichia *Brasiliensis? Hornsch. in Fl. Brasil.*

On a tree. Mission of Duro, Oct. 1839. Specimens few and imperfect.

This moss very much resembles *Neckera acuminata*, Hook. Musc. Exot. t. 151.

75. Grimmia *julacea, Hornsch. in Fl. Brasil. t.* 1, *f.* 1.

Woods of Minas Geraes, 1841.

This moss is cladocarpous, not acrocarpous, (vide Bruch, et Schimper, Bryol. Europ.) and is altogether unlike *Grimmia* in habit; it belongs to the Bridelian genus *Cryphæa*, except that the inner peristome is wanting.

75. *b.* The same. Organ Mountains. *c.* Morro Velho. Oct. 1840. *d.* Minas Geraes, near Formoso.

76. Neckera *virens, nov. sp.* Caule subpinnato complanato, ramis brevibus, foliis laxiusculis lateralibus patentibus reliquis erectiusculis ovatis acuminatis concavis integerrimis subenerviis siccitate appressis, seta brevi, capsula elliptico-oblonga erecta, operculo conico acuminato.

On a rock near a waterfall, Organ Mountains, *n.* 6, (2).

Leaves deep green, with two short nerves at the base; reticulation small, the areolæ oblong. Seta 3-4 lines long. Perichætial leaves convolute, erect, lanceolate. Outer peristome red, teeth converging lanceolate frequently bifid or perforated, erect when dry; cilia of the inner peristome half as long and deeply coloured. Operculum one-third the length of the capsule. Annulus none. Calyptra pale dimidiate. Sporules large.

Differs from N. *breviseta*, Hook. et Wils. Journal of Bot. vol. 4, t. 24, A, in its compressed foliage. Leaves not reflexed in the margin. The short capsule also distinguishes this Moss from all the allied species.

77. Neckera *julacea*. *Schwaegr. Suppl. t.* 245.

N. longiseta, Hook. Musc. Exot. t. 4.

On trees at the foot of the Serra de Santa Brida, Province of Goyaz. Feb. 1840.

77. b. The same. Mission of Duro. Oct. 1839.

78. Daltonia *splachnoides. Schwaegr. Suppl. t.* 295, *var. major.* Serra de Piedade.

With the peristome of *Hookeria*, this Moss has a very peculiar calyptra, which, in connexion with the habit, may perhaps serve to keep it distinct from that genus.

79. Lepidopilum *subenerve. Hornsch. Fl. Bras.*

Neckera scabriseta. Schwaegr. Snppl. t. 82.

Stem of a large tree. San Castano. Oct. 1840.

80. id.? *var. minor*, foliis acutis. Near Formoso. Oct. 1840.

81. Hookeria *albicans*, (Leskea albicans) *Hedw. Sp. M. t.* 54.

On trees, near Formoso, Minas Geraes. Oct. 1840.

81. b. H. *repens. Schwaegr. Suppl. t.* 274, *a.* With the last.

82. H. *Merkelii. Hornsch. in Fl. Bras. t.* 3, *f.* 2.

On a stone. Corcovado, *n.* 12, (1).

"Seta scabriuscula," so described in the work cited; but this character is quite variable, as appears by an original specimen in which the seta is almost smooth.

83. id.? *var.* calyptra pallida. On decayed wood, Arrial das Merces. Oct. 1840.

83. b. Same as No. 84. Calyptra rufo-fusca. Mixed with the last.

84. Hookeria *Merkelii*? *var.* seta lævi.

On a moist bank, near the City of Rio Janeiro, *n.* 1, (1).

85. H. *Merkelii* (forma normalis?) seta scabra.

Moist rocks by the side of a small waterfall, Serra de Araripe. Sept. 1838.

85. b. id. Serra de Araripe.

H. *scabriseta*, Hook. Musc. Exot. t. 52, has the seta decidedly hispid, and may be truly distinct from *H. Merkelii*; but it is doubtful whether the latter moss, and *H. microcarpa*, of Fl. Bras. are really different from *H. depressa.*

86. H. *Langsdorffii. Hook. Musc. Exot. t.* 121. Organ Mountains.

87. H. *marginata, nov. sp.* Caule fastigiatim ramoso, ramis brevibus subcompressis, foliis laxiusculis subpatentibus (siccitate erectis vix crispatis) ovatis vel ovato-oblongis acuminatis concavis marginatis integerrimis pellucidis tenuissime binervibus, nervis supra medium desinentibus, capsula ovata cernua, operculo rostrato, calyptra carnosa pallida lævi.

Except in the distinctly margined leaves, this moss bears a strong resemblance to *H. Olfersianum*, Fl. Bras, t. 3, f. 4.

88. H. *incurva. Schwaegr. Suppl. t.* 275, *b.*

On a moist bank. Corcovado, *n.* 13, (1).

88. b. id. On decayed wood, Pajol, Minas Geraes. Oct. 1840. *c.* id. Formoso, Minas Geraes. Oct. 1840. *d.* id. Organ Mountains. *e.* Province of Rio.

89. H. *pilifera, nov. sp.* Caule vage ramoso, vix pinnato, ramis elongatis compressis, foliis ovato-oblongis longe ac repente acuminatis (fere piliferis) superne serrulatis binervibus pallidis flaccidis, capsula subovata cernua, calyptra lævi.

H. pilifera. MSS. in Gardner Herb. Fl. Bras. Musci.

On the face of a moist rock, Organ Mountains. March 1837. *n.* 15, (2).

Stems two inches long, with slender branches. Leaves very pale, almost colourless, erect and nearly appressed when dry, with long narrow flexuose serrulate points, the reticulation minute. Calyptra pale brown.

90. Hypnum *laricinum. Hook. Musc. Exot. t.* 35 (*Hypopterygium*, Bridg. Bryol. Un.)

On a rock, in damp shady woods, Organ Mountains. April, 1837, *n.* 13, (2).

90. b. id. Serra de Piedade, Aug. 1840.

91. Hypnum *tomentosum. Hedw. St. Crypt. Vol.* 4, *t.* 19. (*Racopilum*, Sw. Brid.)

Jurajuba Bay, opposite Rio Janeiro, 1837. On rocks.

b. id., Rio Comprido. *c.* at the root of an old tree, Rio Comprido. *d.* on decayed wood, near Arrayas, Province of Goyaz. April, 1840, *n.* 1, (3), 14, (1), and 22, (1).

92. Helicodontium *tenuirostre. Schwaegr. Suppl. t,* 293.

Laranjeiras, and *b.* Organ Mountains, on rocks, *n.* 16, (1).

93. Neckera *longirostris. Hook. Musc. Exot. t.* 1.

Organ Mountains. This properly belongs to *Leskea.*

93. b. id. on stones in streams, Organ Mountains.

94. Hypnum *crassiusculum. Schwaegr. Suppl. t.* 91.

95. Leskea *cylindrica ? Fl. Bras.*

Arrial das Merces. A few specimens only, mixed with other mosses. Perhaps only a variety of the last.

96. Leskea *cavifolia, nov. sp.* Caule ascendente parce ramoso, foliis confertis patentibus subsecundis (sursum spectantibus) siccitate appressis late ovatis acutis enerviis margine reflexo, capsula subovata erecta, operculo longirostro.

Jurajuba Bay, opposite Rio, on a rock, 1837.

Stems less than half an inch long, seta 3 lines long, calyptra dimidiate. A smaller moss than No. 94, with broader leaves, which have the reticulation distinctly dotted. Perichætial leaves ovate lanceolate.

97. Hypnum *Loxense* var.? (See No. 102). On a decayed tree. March, 1837, *n.* 21, (2).

98. (See No. 102). Organ Mountains, on old trees, *n.* 9, (2).

99. (See No. 102). Arrial das Merces. October, 1840. *b.* Formoso. Minas Geraes.

These may all be small states of *Hypnum Loxense, Hook.* The inner peristome is frequently destitute of cilia, but in other respects they are too much like No. 102, &c. to be separated as species.

100. H. *Loxense var.* more like No, 102, *n.* 20, (2).

101. Leskea *ambigua? Schwaegr. Suppl. t.* 198.
Organ Mountains. Perhaps only a state of No. 94. Sparingly intermixed with other mosses.

102. Hypnum *Loxense, Hooker in Schwaegr. Suppl. t.* 259, b.
Organ Mountains, on a stone in a river, *n.* 4, (2).
The original specimen of *Hypnum Loxense* being mislaid, we are unable to identify those now before us with positive certainty.

102. b. Hypnum *lithophilum? Hornsch. Fl. Bras.*
Intermixed with the last, from which it differs in the spreading leaves, not exactly like an original specimen, which has blunter and somewhat flaccid leaves.

103. H. *Loxense, var.* Moist shady rocks, Arrayas, Prov. Goyaz. April, 1840.

104. H. *Loxense,* Corcovado, *n.* 28, (1).

104. b. (See No. 102 b.) On a moist rock, near a waterfall, Organ Mountains, *n.* 29. (2).

105. Probably a variety of the next. (Compare H. splendidulum, Hornsch. Fl. Bras.)

106. Hypnum *subsimplex. Hedw. Sp. M. t.* 69.
H. tenerum. Wils. and Hook. Musci Americani. No. 108.
Arrial das Merces, on decayed wood. Oct. 1840.

106. *b.* id. Province of Rio. *c.* var. *major.* Moist rocks, Serra de Araripe. Sept. 1838.

107. Scarcely different from No. 105. Leaves inclining to falcato-secund. On a decayed tree, Organ Mountains. March, 1837, *n.* 22, (2).

108. More like *Hypnum subsimplex* in its usual state, than the last. Leaves longer, and less secund. On decayed wood, Formoso, Oct. 1840.

109. Hypnum *vesiculare, Schwaegr. Suppl. t.* 119.
Laranjeiras, on a stone in the rivulet, *n.* 15, (1).

110. Id. *var.* Arrayas, moist banks. May, 1840.

111. H. *cyparissoides? Hornsch. in Fl. Bras.*
On a stone, Corcovado, *n.* 10, ( ).

112. H. *leptochæton? Schwaegr. Suppl. Vol.* 1, *Part* 2, *p.* 296.

On a large decayed tree, in the deep forest, Organ Mountains, Feb. 1837, *n.* 18, (2).

113. Id. Province of Rio.

114. (See No. 118).

115. H. *elegantulum, var.? Hook.*

On a dry bank, Corcovado, *n.* 11, (1).

Very much like a specimen from Hornschuch named *Leskea elegans*, and perhaps not different from *H. oxypoma, Fl. Bras.* It differs, however, from the figure and description of that moss in Schwaegr. Suppl. t. 259, *a*, in having the leaves not truly nerveless; capsule pendulous, deep chestnut brown; outer teeth of the peristome very long and incurved when dry. It would also seem that the operculum and calyptra are unconformable, but the examples are not sufficient to decide.

116. H. *elegantulum, Hook. Musc. Exot. t.* 84! *Flora Brasil.!*

On a dead tree, Organ Mountains. June, 1837. *n.* 4, (3).

117. Id. *var.* foliis longioribus; Formoso, Minas Geraes. Oct. 1840.

118. H. *Langsdorffii*, Hook., caule repente, surculis erectiusculis arcuatis pinnatim ramosis, ramis compressiusculis, foliis caulinis patulis cordato-acuminatis rameis erecto-patentibus subdistichis ovato-lanceolatis serrulatis subenerviis, seta lævi, capsula ovata cernua, operculo conico-acuminato. H. acrorhizon? Hornsch. in Fl. Bras.

The corrected specific character here given has been drawn up from Langsdorff's original specimens, communicated by Swainson, which agree with these of Mr. Gardner, except that the leaves are rather more patent. The moss is closely allied to *H. elegantulum*, and differs chiefly in its smaller size, and the narrower less patent leaves, which are paler, with larger areolæ, and the surculi are frequently rooted at the extremity and subbipinnate. The operculum is scarcely more than half the length of the capsule. The error in former descriptions has arisen from having inadvertently confounded with this moss a specimen of *H. Richardi. n.* 28, (2).

119. Probably a variety of the last, but approaching also to No. 120. Near Piranga, on trees.

119. b. H. *Ochron? Schwaegr. Suppl. t.* 285, *a.*

Intermixed with the last. Much resembling *H. molluscum,* but with shorter almost pendulous capsules.

120. H. *Andicola?* Hook. Musc. Exot. t. 83, *var.* foliis confertis ovato-acuminatis concavis siccitate substriatis, capsula horizontali, operculo conico acuminato.

This moss differs from No. 118, to which it is nearly allied, in its broader acuminate leaves, which are not at all distichous: they are rather more patent than in original specimens of *H. Andicola.* In the latter we find the capsule not truly erect, and shorter than represented in Musci Exotici. The affinity between this and *H. Langsdorffii,* and *H. elegantulum,* is so close as to render it somewhat doubtful whether they are not all forms of one species.

121. H. *subflavum, nov. sp.* Repens, parce et vage ramosum, ramis simplicibus, foliis patentibus sursum spectantibus confertis ovatis acuminatis concavis integerrimis seminerviis apice recurvis margine subreflexo, capsula ovata horizontali, operculo conico brevirostro.

On the trunk of a dead tree, Serra de Araripe.

Not unlike the figure of *Leskea longirostris!* Schwaegr. Suppl. t. 290, *a.* except as to the capsule. Leaves shining, yellowish.

122. Id. On rocks and trees in a ravine, near Oeiras. May, 1839.

123. Hypnum *saxatile, nov. sp.* Repens, vage ramosum, ramis complanatis subsimplicibus, foliis subdistichis ovatis acuminatis concaviusculis integerrimis seminervibus, capsula ovato-oblonga horizontali, operculo conico-acuminato.

On stones in woods, Natividade. January, 1840.

Very like *H. Auberti,* Schwaegr. Suppl. t. 88, but differing in its nerved, slightly concave (not cymbiform) leaves, and in the form of the capsule. Inner peristome with solitary cilia. Operculum more than half the length of the capsule, which is in some cases contracted below the mouth. Our moss also differs from a specimen, named by Hornschuch *H. auronitens*, from the Amazon river (which we suppose to be *H. Auberti* of Fl. Bras.) in the shape of the leaves, and in the presence of the nerve. It is closely allied to *H. Tavoyense, Hook. Ic. Plant. t.* 24, *f.* 1; but has the leaves more truly ovate and appressed, with smaller reticulations, and a more elongated capsule.

124. H. *Megapolitanum? Weber and Mohr.* Organ Mountains. A smaller moss than *H. Sellowii, Flora, Bras.* with narrower distant leaves, which when dry are more contracted, but not differing in any tangible characters.

124. b. id. Near Formoso, Oct. 1840.

125. Pilotrichum *remotifolium? Fl. Brazil.* Organ Mountains.—A barren specimen, found intermixed with another moss. Perhaps a distinct species, with cordate acute leaves, not recurved, but suberect. It is also allied to *Pilotrichum recurvifolium, Fl. Bras.* (which appears to be identical with *Hypnum patens,* Hook. Musc. Exot. t. 56) but ours has the sides of the leaves reflexed when dry.

125. b. Hypnum *tamariscinum, Hedw. Sp. M. t.* 67. Organ Mountains.

126. H. *spiniforme. Hedw. Stirp. Crypt. Vol.* 3, *t.* 25. Trunks of trees, Corcovado, *n.* 8, (1).

HEPATICÆ.

127. Monoclea *crispata, Hook. Bot. Miscel. vol.* 1, *p.* 117, *t.* 27.

Organ Mountains, on stems of small trees. Beautiful specimens, *n.* 33, (2).

Frond not pinnatifid, but very much crisped in the margin, so that the folds overlay each other. The sphærical bodies attached to the midrib (fig. 2), contain the anthers, and are ultimately torn open at the apex.

128. Anthoceros *punctatus, var. major.* (*Eng. Bot. t.* 1538. *Dill. Musc.* 476, *t.* 68, *f.* 2).

Organ Mountains, *n.* 41, (1).

129. Riccia *fluitans, Linn. Eng. Bot. t.* 251.

Stagnant pool, near Rio. July, 1837, *n.* 11, (3).

130. Riccia *paradoxa, nov. sp.* Fronde oblonga (subinde oblongo-obovata) flaccida subsimplici subplana glauca inferne atropurpurea margine subundulata, capsula nunc in fronde omnino immersa, nunc in pagina superiore frondis extante et squamis involucralibus 2-3 rotundatis dentatis membranaceis circumvolutis obtecta, sporulis majusculis muricatis.

Moist shady bank, near Oeiras. Very few specimens were gathered of this highly curious plant.

Fronds scarcely more than one fourth of an inch in length, the margin crenulate and wavy, much inflexed when dry, texture very thin, the epidermis composed of large cellules with indistinct pores, nerve thick and broad, covered beneath with numerous tough whitish radicles, accompanied by a few ovate acuminate scales. In the structure of the external fructification there is a manifest approach to *Sphærocarpus,* from which it differs in the ovate form of the involucrum, which is composed of at least two separate portions folded together. Calyptra roundish-obovate. Sporules about 100 in each capsule, reddish-brown, somewhat angular and distinctly muricate. The immersed capsules are precisely conformable to the generic character.

131. Marchantia *anapodophylla, Richard* (fide Taylor). Morro Velho.

The specimens do not show any calyx, and on that account rather belong to *Fegatella.*

132. Plagiochila *Migueliana? Lind.*

133. Plagiochila *distinctifolia, Lind.* (fide Taylor). Trees, Minas. Oct. 1840.

134. Noteroclada *confluens, Tayl. MSS.* On a moist bank, Organ Mountains.

Similar to *Jungerm. hyalina,* but larger, *n.* 32, (2).

135. Jungermannia *serrulata, Hooker, Musc. Exot. t.* 88, *n.* 42, (1).

136. J. *connata, Swartz, n.* 43, (1).

137. J. *diffusa, Sw.* (Frullania dichotoma, Raddi). Arrial das Merces. Oct. 1840.

138. Frullania *Brasiliensis, Raddi.* Arrial das Merces. With the last.
139. Jungermannia *Eckloni, Sprengel.* (J. infundibulata, Hook. and Wils. MSS.) Serra de Piedade.
140. J. *furcata, Linn.* Organ Mountains, *n.* 34, (1).

LICHENES.

141. Cladonia *perfilata, Hook. Ic. Pl. t.* 192, *n.* 40 (1).
142. Variety of the last. Organ Mountains, *n.* 42, (2).
143. Cenomyce *rangiferina. Ach. Synopsis p.* 277, *n* 38, (1).
144. Ramalina *linearis, Ach. l. c. p.* 294, *n.* 39, (1).
145. Usnea *florida. Ach. l. c. p.* 304. Organ Mountains, *n.* 40, (2).
146. Collema *bullatum, Ach. l. c. p.* 325. Organ Mountains, *n.* 39, (2).
147. Sticta *macrophylla, Hook. Bot. Misc. t.* 13, *n.* 35, (2). *b.*
148. Sticta *damæcornis, Ach. l. c. p.* 231, *n.* 35, (2). *a.*
149. S. *aurata Ach. l. c. p.* 231.
150. Parmelia *perforata. Ach. l. c. p.* 198.

Notice of the Life and Labours of AUCHER-ELOY; (*translated from the preface to the* "*Relations de Voyages en Orient de* 1830 *à* 1838, *par* AUCHER-ELOY, *revues et annotées par* M. LE COMTE JAUBERT,") *Paris*, 1843.

"We cannot but think that all the friends of Natural Science will feel pleasure in becoming acquainted with the career of one of the most daring investigators whom that Science has ever inspired, and will be glad to know what remains of his writings. Botanists, above all, should be indebted to us; for it is among them that the kind of brotherhood eminently prevails which has been observed among persons who follow the same kind of pursuit. Such individuals compose a society among themselves, which has its own existence, its peculiar language and its rallying-signs; and while consolidated in their efforts to promote the common object, they take a pious pleasure in bringing to light the labours and the services of their forerunners. Nor will men of the world refuse to sympathize with the intrepid being, who, aiming at a laudable object, and pursuing it in the midst of extraordinary difficulties and perils, passes through adventures of a most singular description, and finally, in a strange land, falls the victim of his energy.

" Peter Martin Remi Aucher, the son of a wine-merchant, was born at Blois, on the 2nd Oct., 1793. He received his admirable classical education at the college of that city, but the slenderness of his patrimony obliging him to choose a profession, he studied pharmacy, first at Orleans, and then at Paris, to which latter place he went in 1812. Botany that indispensable accessory to the line of life which he had selected, possessed particular charms for our young student, and he eagerly followed it under the auspices of those great masters, Antoine-Laurent de Jussieu and Desfontaines, and their kind and admirable lessons produced the impression on his mind which was generally felt by all those who were so fortunate as to learn under them.

In 1813, while attached to the service of the army hospitals in Spain, he contrived to make a collection of the plants which grow in that country and the south of France. The Peace of 1814 sent him back to Blois ; but, shortly after, the revolution of the *Hundred Days* summoned him to join the Army of the North, and he brought home a good many plants after that brief and fatal campaign. Once the passion for Natural History takes possession of a man's mind, every thing seems to minister to it ; food and the most adverse circumstances are incapable of annihilating it ; and that a spring of alternate enjoyment or consolation is found in its indulgence.

On his return a second time to his native place, Aucher resumed his studies with diligence, and in 1817, having married a young lady, named Eloy, belonging, like himself, to a highly respectable family in the middle ranks, he from that time, according to the custom of that province, added her name to his own. Shortly afterwards, he opened a bookseller's shop, and in 1820 added a printing establishment to it. In 1826, he became possessed of another printing office in Paris, while still retaining that at Blois. At this period of life, he not only pursued the regular business of this profession, in which he excelled, but like many other printers who have themselves cultivated literature, he published various works on his own account.

Among the more beautifully executed books which have issued from his press, may be mentioned "*The Luciad,*" translated by himself from the Greek, and an edition of "*Daphnis and Chloe,*" in Greek and French, translated by Amyot. He was the author of an historical description of those countries which form the department of Loire et Cher, which heads the annual account of this department for 1825, and of "*Entomology, in Fifteen Lessons.*" He also published a prospectus and specimen sheet of a *Polyglott Bible,* but was obliged to relinquish it, for want of sufficient encouragement; and lastly he began to prepare a large book upon *Insects,* entitled "*The Reaumur of Youth,*" which remained in manuscript and incomplete.

Among, however, all these varied labours, Botany continued to be his favourite study, and he diligently explored the department of the Loire et Cher, with a view to publish its Flora, a more pleasing task than that to which future events compelled him to addict himself. At this period, he became intimately acquainted with M. Naudin, a Justice of the Peace, now Councillor of the Prefecture and an ardent admirer of Natural History, also with a most respectable ecclesiastic, M. Lefrou, Rector of Cour-Cheverni, himself an excellent Botanist, whose just praise may be seen in M. Boreau's *Introduction to the Flora of Central France.**

From 1826, Aucher-Eloy fixed his residence in Paris, and continually endeavoured to extend his business, but his enterprizes did not meet with the desired success, and one of the frequent and trying crises in the book-trade, coming in

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* In 2 vols. 8vo. published at Paris by Roret, in 1840.

May 1829, he found his affairs much involved, and was compelled to relinquish his shop.

He turned his views towards a country, to which too many Frenchmen have been attracted by promises, never to be realized and by the example of a few solitary instances of good fortune, which has oftener been granted to intrigue than to real ability, I mean Russia; whither, accompanied by his wife and daughter, he went in the hope of joining a scientific expedition, projected for exploring the Caucasus; but the expedition was never sent. He then proposed to the Russian government to visit the interior of the country, with a view to making collections and gathering the materials for a Flora. The first reception promised well, but to his mortification, this scheme was also adjourned. Meanwhile, the Persian Prince Kosrew Mirza, Ambassador at Petersburg, had asked M. de Nesselrode to recommend to him some Frenchman, who should be competent to establish a printing office and academy, and the Minister had cast his eyes on Aucher-Eloy; who was once more disappointed, from the refusal of the Persian Prince, to give that guarantee, which he considered himself entitled to claim.

The Academy of Sciences at Petersburg, which had learned to appreciate the subject of this little memoir, requested him to accompany the mission, which is sent every tenth year, to Pekin through Siberia and Mongolia; but here the jealousy of the Russian government, ever afraid of admitting foreigners into the secret of its relations with China, interfered to deprive him of a prospect, which he had ardently coveted realizing.

Disappointment and sickness now brought Aucher-Eloy to the brink of the grave, his daughter too fell dangerously ill, and it was only the devoted attentions of his wife and the generosity of M. Cournand, a French gentleman, which saved this unfortunate family from destruction. On his recovery, Prince Waldbowsky appointed Aucher-Eloy his secretary, with a moderate salary, and treated him with much kindness.

Halil Pacha, the Turkish Ambassador at Petersburg, in one of those fits of an impotent frenzy for civilization which Sultan Mahmoud had brought into fashion in his country, induced Aucher-Eloy to accompany him to Constantinople, there to establish a Turko-French newspaper: he went in the train of Halil Pacha, botanizing on the road, whenever he could seize an opportunity. No connected account seems to have been made of this journey, respecting which we know no more than is afforded by some scattered remarks, in his catalogue of plants collected on the way, chiefly in those Russian provinces, which border on the Black Sea. Mme. Aucher-Eloy and his daughter, after some little time, joined him at Constantinople.

As he drew near "those realms of the East, that land of the Sun," celebrated in history and so brilliantly adorned by nature, Aucher-Eloy felt all the ardour with which that country must ever inspire the man of education; a wide field of discovery was opening before him and he trusted to gain himself a name. Here, as elsewhere, the fair promises of Halil Pacha disappointed the hopes of our naturalist, who, unable to employ himself usefully otherwise, determined on undertaking a series of journeys in Turkey, Greece, Egypt, Syria, and Persia, with a view to collecting specimens, both of Botany and Zoology. The connexion, which he still kept up with the *savans* in Europe, would enable him, he trusted, to dispose of his collections in their cabinets. Eight years did he pursue this noble plan and still longer would he have pursued it, but death, the result of fatigue, closed his career. No person could be better adapted by nature, to follow this trying mode of life; a robust constitution and great energy of character, imparting such power as made him feel competent to endure the vicissitudes to which the travelling naturalist, with slender pecuniary means, is ever exposed. We, ourselves, have travelled in the East, but it was under the most favourable circumstances, and possessing every facility for pursuing our investigations, and while exploring the less distant provinces of Asia Minor, we did not escape some sufferings. But it was child's play, we must own, compared with the task which is imposed on the poor naturalist, who reduced to the slenderest pittance and compelled to economise on the last farthing, sees himself obliged to substitute his own almost superhuman efforts, for the means which he lacks. "Wretched money!" thus sorrowfully cried Aucher-Eloy in one of his letters. What would he not have accomplished for science, if, from the commencement, he had received, I will not say the liberal encouragement which the British government bestows on those individuals whom she sends out to explore, but even the small assistance which the French budget too parsimoniously places at the disposal of our ministers. Still, it is but justice to admit, that, at this period, Aucher-Eloy was little known, and the distance which lay between him and the public offices in Paris, precluded all probability that his plan, not announced beforehand, could claim the attention of those in power. When once his earlier collections were received in France, the value of such a traveller began to be understood. M. Adolphe Brongniart had consented, in that spirit of liberal patronage which distinguishes the professors of the Museum, to become the depositary of the greater part of his collections and always exerted himself to effect the sale of them. M. De Candolle, whose death is now mourned by all the scientific world, had been much struck with the number and interesting nature of those new species, with which Aucher-Eloy had enriched the truly classical *Prodromus*, and both these eminent persons, joining their efforts to those of M. Naudin, procured for him some assistance from the Museum and the Minister of Public Instruction. Part of the funds thus obtained reached the hands of our traveller, during the course of his last expedition, the remainder arrived too late.

These unfavourable circumstances exhibit in the strongest light the merits of his enterprize, and the mind is filled with respect and astonishment when contemplating the immense extent of his collections, the excellent preservation of the different specimens which they contain and the order and accuracy of the remarks that are appended; all pointing out, not only an exact and conscientious collector, but an accomplished Naturalist. Though almost destitute of books and obliged to trust his own memory and judgment in the hurried determination of his plants, most of his new species have received the sanction of the first masters in Botanical Science. He had even entertained a plan for publishing a systematic Flora of the East, and no one could be better prepared than himself for the execution of this gigantic enterprize, but the work was necessarily postponed till the return to France should supply him with those indispensible means of information and objects of comparison which this country affords.

His plants are dispersed in numerous herbaria, public and private, both in France and among foreigners. Some idea of the amount of his specimens may be derived from the following note, extracted from the account kept by M. Adolphe Brongniart, of those collections alone which have passed through his hands.

The first *envoi*, comprizing the years between 1830 and 1836, has been distributed as follows:

Hooker	2,600 sp.	Shuttleworth	1,241 sp.
Boissier	2,247 ,,	Moricand	1,030 ,,
Thuret	1,826 ,,	British Museum	875 ,,
Fielding	1,491 ,,	Jaubert	801 ,,

The second, which we were enabled to examine in Constantinople, in the year 1839, when Mme. Aucher and her daughter were earnestly occupied in putting the whole in order, has since been thus divided:

	Species.		Species.
The Paris Museum, containing all the unique specimens	1,800	B. Delessert	1,650
		Maille	1,592
		Hooker	1,511
M. Webb	1,682	Boissier	1,431

	Species.		Species.
Thuret	1,364	British Museum . .	1,035
Fielding	1,266	Jaubert	1,000
Shuttleworth . . .	1,186	Dunand de Galatin .	430
Moricand	1,111		

And a limited number yet remains for distribution, in the possession of M. Brongniart. In all cases, there are generally several samples of each species, very rarely a single one.

Still, however great may have been the eagerness of amateurs to possess themselves of Aucher-Eloy's collections, it is very certain they never would have brought him much money. A century of plants, even the rarest, commands but a small price, especially when offered for sale, because that portion of the public which takes interest in such things, is limited and far from rich. Naturalists, who pursue this honourable branch of industry, can hardly look to obtain an adequate remuneration, except when, as in the society established at Esslingen, (the *Unio Itineraria*) their expenses are covered by subscriptions, paid in advance. And, even then, how poor is the encouragement! Unless Aucher-Eloy had been upheld by the most passionate devotion to Botany, he must quickly have renounced his pursuits. We may, however, be allowed to say that he was in error, when, during that brief season of temporary discouragement, to which even noble and undaunted spirits are occasionally subject, he apprehended that those individuals who might purchase his collections, at the rate of thirty francs the hundred, would consider that this paltry sum cleared them of all obligations towards the traveller. No; most assuredly; there is no Botanist who does not remember and honour the laborious Naturalist, who underwent such hardships to gather the plants, which he quietly examines in the retirement of his own cabinet; or who fails to accompany Aucher-Eloy, in mind, over those scorching plains, pestilential marshes, and inhospitable forest-clad mountains, where he culled the specimens which yield him such enjoyment. The annexed publication will acquaint our readers with many of the details of his painful pilgrimage, and they will prize him the more. His memory as a botanist, celebrated by the great Genevese Professor,* has no ingratitude to fear, and numerous Naturalists, following the example of De Candolle, are continually publishing his discoveries. Almost simultaneously with ourselves, M. Boissier, of Geneva, in the *Annales des Sciences Naturelles,* is claiming for Aucher-Eloy the estimation he deserves, and a work which we have now in course of publication, assisted by M. Spach, and entitled, *Illustrationes Plantarum Orientalium,* contains the signal additions which he had made subsequently to the time of Rauwolf, Tournefort and Labillardière. If these efforts obtain the public favour, it is to Aucher-Eloy that we gladly accord the honour, for we merely collect those materials for a *Flora of the East,* which his imagination first contemplated, and which we have scarcely courage to carry out. A Botanist of the first order would be required to accomplish such an enterprize, and let this be who it will, Aucher-Eloy ought not to be forgotten among those who laid the foundations.

All that climate, sickness, and the cruelty of men, in an uncivilized country, can inflict of misery, was tasted by Aucher-Eloy. The overpowering heats of the day and the customary chills of the mountain nights, want of shelter, torture of insects, scanty food and destitution of water, or only such water as was impregnated with brackish and saline matter, these trials he endured for eight long years! We may wonder that his constitution should have held out for that time, but his existence was painful enough and acute rheumatic attacks were among the lightest of his ills. His sight was nearly perished; in Ghilar he narrowly escaped death from the malignant fever which was ravaging the shores of the Caspian Sea, while in Persia the cholera brought him to such a state, that, neglected and alone, his moral strength alone sustained him and taught him to invent the means of unexpected restoration. At Muscat, he was seized with that formidable and peculiar fever, of which the first symptom is a faint of many hours, and from this terrible pass he extricated himself by the aid of quinine, an admirable discovery, invented by a Frenchman,* whose merits our government ought yet munificently to reward.

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* In the sixth volume of De Candolle's *Prodromus,* a genus of *Compositæ* is named *Auchera,* with the following note, which is a patent of scientific nobility. "Genus dicatum clarissimo *Aucher-Eloy,* botanico Blesensi, hujus et plurimarum aliarum stirpium detectori, qui botanices causa jam a pluribus annis orientales plagas proprio marte et vitæ periculo peragrat."

But the severest trials which a traveller can endure, are those which proceed from the hand of man, and from the almost total want of order in governments, and of probity among individuals. There no efficacious aid can be obtained from the power which still lays claim to authority, and brute force carries the day, pillage is the business of whole nations, while cunning, falsehood, and the most disgraceful crimes prevail every where. On one occasion, while travelling by caravan, it was necessary to have recourse to fire-arms, and Aucher Eloy being chosen general, his able management saved the lives of the party. At other times, when he had but four companions, he was exposed to all kinds of outrage and threats of assassination; and more than once, his presence of mind alone extricated him from circumstances which appeared fraught with certain death.

Our steam-boat tourists, who see no other cities but Smyrna and Constantinople, are apt to imagine that there is nothing now to fear from the religious prejudices of the East; but Aucher-Eloy shows us that these still exist in all their pristine virulence; and though, on certain occasions, that traveller's quality of a Frank earned for him some consideration, it much oftener exposed him to insult, and he was too ready to yield to his constitutional temerity, and to resent these affronts. The Persian character is the subject of his heaviest complaints. He depicts those people as the most degenerate in the East; and assuredly their prying curiosity and insolence often cost him dear, while their cowardice proved no less injurious to his interests.

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* M. Pelletier.

For the honour of human nature, it must be stated that there were some compensations for these trials, and that Aucher-Eloy met, even among these men, with a few individuals, as the Chief of Laristan and the Sheik of Bender-Abassy, who testified towards him a kindness for which he was deeply grateful. It is needless to say that he never lacked that protection and assistance which Europeans, when he happened to be near them, could bestow, and he received especial kindness from the diplomatic agents of France, and the representatives of Russia and England at the court of Teheran; Count Simonitch, Sir John Mac Neill, and Colonel Shee, in particular, conferring on him all the services that might be expected from such enlightened individuals. The Christian missions scattered in the East, also proved a great resource; and as was wont in the middle ages of Europe, convents, those asylums of literature and misfortune, protected our traveller from the barbarities of the Eastern populace, and exhibited the touching influence of religion in a way which shows how much it is the policy of commerce and of power to favour its diffusion.

We shall now give a succinct analysis of six journies made by Aucher-Eloy, starting from Constantinople, that city, in the environs of which his family was settled, being his own rendezvous, and the central point to which he transmitted his collections.

In November, 1830, he set off for Egypt, furnished with instructions from the Academy of Science, at Petersburg. At Alexandria he was so fortunate as to make the highly desirable acquaintance of M. Gustave Coquebert de Montbret, a relation of M. Brongniart, whom a love for natural history had also attracted to the East. Together they proceeded to the ruins of Thebes and came back to Cairo; M. de Montbret returning to Europe by Italy, and Aucher-Eloy taking his way through Suez to Mount Sinai, and thence to Jerusalem by Gaza, to Syria, Cyprus and Stancho, so that he did not reach Constantinople again till October, 1831. It was then in agitation to employ him on a mission to France, from the Porte, but this scheme was abandoned.

In 1832, he visited Smyrna, and thence went to Rhodes and the adjoining coast of Asia-Minor. His own recital proceeds no farther than Aidin Guzel Hissar, so that it is presumed he went back from this town to Smyrna.

In 1833, he received a visit from M. Coquebert de Montbret, and they settled for a time at Therapia, where M. and Mme. Aucher-Eloy opened a French school. It was about this period that the wife and daughter of our traveller conducted the education of the daughters of M. Vogoridi, afterwards called Prince of Samos. Accompanied by M. de Montbret, Aucher-Eloy investigated all the environs of Constantinople and Broussa, and especially Mount Olympus.

In February, 1834, these friends started on a new expedition into Asia. Passing through Nicomedia, Angora, Cesarea, Adana, Antioch, and Aleppo, they reached Armenia by Aintab, Malatia, and the Upper Euphrates, and thence to Erzeroum. M. Charles Texier, well known by his noble archæological labours in Asia Minor, met them at Trebisond, and though he had been acquainted with Aucher-Eloy at Constantinople, the previous year, he could scarcely recognise him, he was so wasted and his hair had become perfectly grey. M. Outrey, the French consul at Trebisond, supplied the travellers with the means of returning to Constantinople, by the shores of the Black Sea. The first narration stops at Erzeroum; we, however, are enabled to add some new details of this journey, and its entire accomplishment, gathered from papers communicated by the family of M. de Montbret, who returned to Europe by way of Semlin and Germany.

Early in February, 1835, Aucher-Eloy set off alone, and went to Broussa, Koutaya, Konieh, the chain of the Taurus and Adana, to Aleppo. From this point he directed his course to Bagdad, and visited Kermanchah, Hamadan, and Ispahan. Then he made an excursion to Zerda-Kou, west of Ispahan; and from this capital of Persia, he re-ascended towards Teheran, and by Sultanieh, proceeded to Tebriz, where his journal stops. Letters addressed to M. Naudin, inform us that Aucher-Eloy arrived at Trebisond, crippled by fever, and suffering under a severe ophthalmic attack, and that he took shipping from that place to Constantinople.

Hardly had he recovered from his fatigue, when a new misfortune befell him, for, in March, 1836, the house which he inhabited at the Fanar, was consumed in one of those conflagrations so common in Constantinople, by which disaster he lost his library, a large quantity of Arabic and Persian manuscripts which he had contrived to get together, and his entire collection of insects, consisting of upwards of fifty thousand specimens, on the sale of which he had counted as raising some funds for his following journeys. Fortunately, his plants had been conveyed to Therapia, and escaped destruction.

Undaunted by these adverse circumstances, he proceeded to fulfil a plan he had long entertained of exploring Greece and the coasts of Turkey in Europe, and a few months enabled him to visit the most interesting parts of these countries. After having landed anew at Smyrna and Chios, he visited in succession Syria, Athens, the Isle of Eubœa, Thessaly, and Mount Athos, and returning in mid-autumn, he joined his wife and daughter, who were settled in the family of M. Crespin, a merchant, of French origin, living at Broussa. While at the latter place, he herborized for a fourth time, on Mount Olympus, in Bithynia.

Here he had the deep grief to learn the death of M. Coquebert de Montbret, which took place at Paris, in July, 1836, just as this friend was about to publish a portion of their common labours. Many a time had M. de Montbret aided Aucher-Eloy with his purse, and his earnest efforts on his behalf in Paris had served him no less.

The desire to revisit Persia seized on our botanist so soon as he was again in Therapia. It was all in vain that M. Adolphe Brongniart wrote to him, urging delay, till he might transmit from Paris the proceeds of his former collections, and the sum that had been granted in answer to the various applications made in his favour to government; equally vainly was he advised to confine himself, for the present, to short excursions in Asia Minor, which might have been very productive, without incurring much expense. He had made great progress in acquiring the Turkish and Persian languages, the season was passing away, so he started again, accompanied by a Frenchman, M. Dufaud, who was to assist in making zoological collections, by a dragoman, named Nicholas, and a servant. M. Dufaud died at Teheran, the victim of fever, aggravated by the unskilful treatment of an English physician; Nicholas, who became dropsical at Ispahan, in consequence of the same fever, was unable to accompany him farther; and the servant, with a hand crippled by the accidental bursting of a gun, also left him. Thus exposed to most trying vicissitudes, Aucher-Eloy investigated, without yielding to discouragement, the north of Anatolia, the Pachalics of Sivas and Armenia, revisited Erzeroum, the base of Mount Ararat, Bayazid, and the banks of the Lake of Ouroumiah, Tabriz, Ghilan, and the adjacent shores of the Caspian Sea, investigating them very thoroughly. From Teheran he accomplished the ascent of the volcanic peak of Demawend, which he had vainly attempted to reach in 1835. Resuming the course he had followed on that occasion, he revisited Ispahan and the hospitable convent of the Catholic Armenians at Djulfa, near that city. From thence, accompanied by a single Armenian servant, named Alawerdi (Dieudonné), he directed his course to Shiraz and Boussa, on the brink of the Persian Gulf, thence to Firozebad, traversing the province of Laristan, and embarked at Bender Abassy, with the intention of exploring Muscat and the little known district of Oman in Arabia. In a small, ill-built and only half-decked boat, Aucher-Eloy encountered a furious tempest, and struggled for many hours, as it were, between life and death. From Muscat he struck into the interior, and reached the territory of the Wahabites, suffering all the time under the fever of the country, till, his strength being exhausted, he was compelled to return to Muscat. Here, a Jew, the agent of the English Consul, who had previously behaved very well to him, availing himself of a time when he was too ill to offer any opposition, compelled him to re-embark for Bender Abassy. The stormy weather obliged them to cast anchor in the harbour of Bender Said, on the extreme frontier of Beloochistan, where the Indian character of the vegetation struck his attention, and made him desire to land and explore the country; but the ship-master hoisted sail suddenly, and then set him down on the Island of Ormuz. He did not, however, relinquish the thought of Beloochistan; and, consequently, on arriving at Bender Abassy, he directed his steps towards Minah, but was compelled to come back, and regain Shiraz, through the interior of Laristan. He reached that place in a dying state; but feeling a little better, he once more started for Ispahan, and with difficulty gained it, having even gathered some plants by the way! The anxious and skilful attentions of the good fathers at Djulfa, and of an Italian physician, named Dr. Bertoni, proved ineffectual to restore his health, which became daily worse; for his constitution, which had endured so many shocks, was now irrecoverably broken. Still he always cherished the hope of restoration. His plan had originally been to visit Herat, Cabul, and Kandahar, but the political condition of these countries put a bar to these plans, and he now only aimed at returning to Constantinople the following year, through Bussorah, Bagdad, Mossoul, and the mountains of Media. During one of those respites which his disease afforded, on the 5th of July, 1838, he ventured courageously on commencing an excursion into the country of the Bucktiaris, in the hope that its fresh mountain air might prove beneficial to restoring his decayed strength. On the 8th, he was slowly climbing one of the summits of the Dalinkou, when a chief of the country, to whom he carried letters, counselled him to proceed no farther, because of the insecurity of the roads, and he sorrowfully returned to that convent of Djulfa, which he was to quit no more. His complaint made rapid progress, and on the 6th of October, he expired in the arms of Dr. Bertoni and of Father Derderian, the Apostolic Prefect.

There only remains for us to give some particulars respecting the work we have undertaken, with the view to arranging and publishing some of those papers by Aucher-Eloy, which refer to his journeys, a task which his widow has authorized us to execute, and in which we are aided by M. Naudin and M. Adolphe Brongniart, anxious, like ourselves, to do honour to the distant grave of our unfortunate fellow-countryman.

The writings in question consist firstly of letters, addressed to his brother, M. Aucher a merchant at Blois, to M. Gustave Coquebert de Montbret, to M. A. Brongniart, Acting Professor at the Museum of Natural History in Paris, to Madame Aucher-Eloy, M. Naudin, M. de Fischer, Director of the St. Petersburg Botanic Garden, to Colonel Shee, to Mme. Lamarinière, a French lady resident at Teheran, and to his dragoman, Nicholas. A few of the letters to M. Naudin were published in 1840, in the 3rd volume of the Memoirs of the Natural History and Literary Society of Blois.

The journals of his expeditions in 1830-1, in 1832, in 1834, and 1835, and 1837-8, form the second set of manuscripts placed at our disposal.

And lastly, several catalogues of his plants were deposited, in order to illustrate the specimens and along with them, in the Museum. All these materials are chronologically arranged. The letters addressed to M. Naudin and M. Coquebert de Montbret make us acquainted with Aucher-Eloy's residence in Russia and journey to Greece, in 1836, of which there is no other relation; and they also complete the several journals of the other tours. These letters we have reprinted entire, at the risk of some repetitions.

In these MSS. a careful narrative cannot be expected, one such as a traveller, restored to the tranquillity of home, could prepare and lay before the public; they are, strictly speaking, the daily notes of passing events, consigned to paper in order to aid the traveller's memory on a future occasion. This is commonly the case in the three first journals, which will be probably deemed too concise, and which we had hesitated about publishing, till we considered that they might be of use as an itinerary and memorandum of those localities where Aucher-Eloy's specimens of plants were gathered.

It has been our object to preserve the original character of these journals, while rectifying the inaccuracies of the pen that haste had caused. A slight *polishing touch,* to borrow one of Aucher-Eloy's own phrases, and a better arrangement of subject-matter, are what we have chiefly aimed at, carefully reserving to the close, those longer dissertations on morals and politics, which were scattered up and down in the MSS. The style of Aucher-Eloy is easy, and indicates the man of talent and taste, imbued with Greek and Latin literature, that sure source of intellectual eminence, frequently a quotation from Virgil and Horace serving to express his feelings. His sentiments are always correct, and his tender affection for family and friends, his devotion to science, and attachment to the honour and interests of his own country, are manifested on every occasion, while the touching recital of his own misfortunes often recalls the memory of another French traveller, our friend and first companion in botanical study, M. Victor Jacquemont, whose letters have been eagerly read all over Europe. Of course, the letters of Aucher-Eloy will never attain such literary success, but we cannot doubt they will be perused with interest.

There has been no small labour involved in deciphering the papers, written with all sorts of liquids, deeper or paler in dye, and often with pencil, half-blurred and effaced, a task in which we have been aided by the acuteness and ability of M. Saillard, who is employed at the Home Office in labours of this kind.

A few notes, historical and elucidatory of manners in the East, seemed needful to explain the text; M. Texier kindly added these, which his intimate acquaintance with the country enabled him to draw up; while to M. Jouannin, Interpreting Secretary to the King, we owe several useful explanations.

As for the botanical notes, their only value will be in helping to collate some of the plants mentioned in the text, with the specimens in the collections. The numbers which we have given, correspond (for the journeys previous to 1839), with Aucher-Eloy's first general catalogue; and for the last expeditions, to the numbers in the tickets at the Museum. There has not been time enough to seek out all the plants, or identify all their names; we have sometimes suggested our doubts, but shall endeavour to clear them up fully in the successive livraisons of our "Illustrationes Plantarum Orientalium.*

Lastly, a good map, containing the tracks, laid out with accuracy, was an indispensible appendage to a work of this kind, and such an one M. Fauchet, draughtsman at the Office of Public Works, has ably executed under our superintendence. We have availed ourselves of some advice from Colonel Lapie, who is engaged at this very time in preparing a complete map of Turkey and Persia, of the most elaborate description, which is to contain the routes of all travelling botanists, from the fourteenth century to the present day, and which will be annexed to our *Illustrationes Plantarum Orientalium.* Here also the course of Aucher-Eloy will be again laid down, M. Lapie having made use of it to correct some previously ill-defined routes and several geographical points that had been doubtful. We have been careful to insert, in both maps, every thing that we had ascertained as to the elevations above the level of the sea, taken barometrically and otherwise.

Such is the tribute we have paid to the memory of Aucher-Eloy. Our most earnest desire is that it may afford some consolation to his surviving relations, and call the benevolent attention of government to his family. Surely we may hope that since it was not granted to Aucher-Eloy himself to revisit France, and there enjoy the position which his labours would have earned for him in the society of naturalists, our government, which holds it an honour to recompense services done to science, will transfer to his widow the advantages which it was not permitted him to enjoy.

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* Noticed in the precending No. of our Journal, and also more fully in an earlier volume.—Ed.

Decades of FUNGI, *by the* REV. M. J. BERKELEY, F.L.S.

First Decade, (With Two Plates, TAB. V. & VI.)

It is intended under the above title to give notices of new or rare species of Fungi in the collection of Sir W. J. Hooker. Occasion also will be taken, of correcting former errors and making up omissions, where it is thought advisable to do so; localities of Fungi will be intercalated after the method adopted by Dr. Montagne in his "Four Centuries of Cryptogamic Plants," the intercalated species being distinguished by an asterisk. Small collections from different countries may thus be enumerated, while larger collections will furnish materials for distinct memoirs. It is much to be wished that collectors of Fungi, would take notes of the colour and substance of their species when gathered; the latter point, especially, being very essential towards ascertaining their affinities. The value of such annotations can best be appreciated by those who have to contend with all the difficulties, which arise in the examination of exotic forms; difficulties which are multiplied ten fold in the genus *Agaricus* from so many of our commoner forms, occurring with slight modifications in tropical or subtropical countries.

1. Agaricus (Pleuropus) *nidiformis*, n. s. prægrandis; pileo carnoso cupulæformi glabro rufo; margine lobato-fisso tenui acuto; stipite centrali brevi compresso irregulari firmo glabro; lamellis ad basin stipitis decurrentibus latis distantibus, hic illic ramosis, ochraceis; interstitiis lævissimis vel reticulatis.

On the ground. Swan River. *Mr. Drummond.*

Pileus forming a cup 6 inches deep, 16 inches broad from margin to margin following the concavity of the cup, fleshy except at the lobed incised margin which is very thin and acute, perfectly smooth, reddish brown. Stem central irregular, 1½ inch high and thick, collecting by its mycelium a mass of small pebbles, compressed smooth of the same colour as the pileus. Gills very broad in the centre, distant, thick at the base, thin and acute at the edge, now and then branched, running down to the base of the stem, ochraceous with the edge umber when dry; interstices either perfectly even or remarkably reticulate in the same individual.

Allied to *Ag. ostreatus*, but a far more magnificent species; when fresh it must be one of the finest of the genus.

* Ag. *fascicularis*, Huds.

Cape of Good Hope. *W. H. Harvey, Esq.*

* Ag. *laccatus*, Scop.

Cape of Good Hope. *W. H. Harvey, Esq.*

2. Bolbitius *mitræformis;* Harv., pileo membranaceo mitræformi acuminato, supra medium striato; stipite gracili flexuoso candido minutissime albo-farinaceo, lamellis adscendentibus valde attenuatis angustissimis anastomosantibus, subinde furcatis. (Tab. VI. B.)

On tenacious clay containing a little iron. Devil's Mount, C.B.S. *W. H. Harvey, Esq.*, 1841.

Gregarious. Pileus 1 inch high, ⅓ of an inch broad, membranaceous, mitræform, much acuminated, becoming more so as the plant advances in age, finely striated more than half way up, margin very thin, ragged. Stem fistulose, nearly 2½ inches high, 1 line thick, white, often twisted, flexuous, sprinkled with very fine white meal. Gills, extremely narrow, ascending, much acuminated, anastomosing, sometimes forked, argillaceous. Spores broadly cymbiform with a minute, lateral peduncle.

Resembling in form *Ag. callosus*, but evidently allied to Ag. titubans, Boltonii, &c., now separated under the name of *Bolbitius* on the same grounds as *Coprinus*. The species when dry, from its elongated pileus and twisted stem, has the air or a *Podaxon* in miniature.

Tab. V. B. fig. 1. B. mitræformis, *nat. size*. f. 2. portion of the gills. f. 3. spores, *both magnified*.

3. Cantharellus (Pleuropus) *capensis*, n. s., pileo orbiculari cupulæformi vel expanso membranaceo candido demum fuscescente villoso, vertice porrecto breviter stipitato; lamellis e centro radiantibus latiusculis subsimplicibus interstitiis reticulatis.

On decayed stalks of herbaceous plants. Summit of Table Mount C.B S. *W. H. Harvey, Esq.*

Pileus $\frac{1}{4}$-$\frac{5}{12}$ of an inch broad, orbicular, with the margin entire or very slightly lobed, white, at length dingy brown, villous, attached by a short stem arising from the elongated vertex. Gills broad for the size of the pileus, radiating from the centre, simple, or nearly so, not distinctly branched, with strongly marked subquadrate reticulations between them.

This species is distinguished from *Cantharellus Bryophilus* by the beautifully reticulated interstices of the simple gill-like folds.

4. Polyporus (Pleuropus) *brunneolus*, n. s. suberoso-coriaceus; pileo tenui reniformi-flabellari cervino-pallido crebrizonato sericeo-nitente; margine acutissimo, stipite brevissimo; hymenio contextu que pileo subconcoloribus; poris minutis punctiformibus dissepimentis obtusiusculis. *Pol. modestus*, Berk. in Hook. Journ. of Bot.

Cuming. Philippine Isles, n. 2027.

Pileus renato-flabelliform, 2¼ inches broad, 1¼ inch long, very thin, but rigid and corky, of a pallid fawn-colour, with a silky lustre, elegantly marked with numerous very narrow concentric zones, and a few shallow furrows. Stem consisting of merely a round disc. Substance and hymenium nearly of the same colour with the pileus. Pores scarcely visible to the naked eye, rather long for the size of the species, punctiform, with the edge of the dissepiments rather obtuse.

This is a very elegant species, which I referred in the first instance to *Pol. modestus,* Kze. but that species, of which I have lately seen authentic specimens, resembles some states of *Pol. xanthopus* and *affinis.* The pilei are sometimes laterally connate though arising from a distinct base.

5. P. (Apus) *portentosus,* n. s. giganteus, pileo carnoso demum friabili pulvinato vertice elevato glaberrimo azono cuticulo tenui alataceo vestito margine subtenui flexuoso; hymenio convexo poris pro ratione pilei brevibus parvis intus pallidis extus fuscis, demum secedentibus, dissepimentis tenuibus.

Swan River. *Mr. Drummond,* n. 125.

Stemless. Pileus a foot or more in diameter, 10 inches long, 6 inches thick, very light and brittle when dry, extremely convex, especially at the vertex, which is much elevated, pulvinate, with about three depressions which cause corresponding waves in the margin of the pileus, which is thin in proportion to the rest of the plant, clothed with a delicate perfectly smooth tan-coloured cuticle. Hymenium convex, extending to the edge of the pileus, which is not inflected; pores rather short, pale within, externally of a dark brown, at least in the dry plant, small, $\frac{1}{72}$ of an inch broad, at length separating from the pileus.

This magnificent species is nearly allied to *Pol. betulinus,* with which it accords in many respects, but its general appearance is very different. The same species, apparently, was gathered in Brazil by Mr. Gardner, but the specimen is still imperfect though of a considerable size, and consequently the colour is deeper than it would be in the fully expanded pileus. It is also minutely scabrous, a character which would probably vanish with age.

* Pol. *australis,* Fr.

Philippine Isles. *Cuming,* n. 2041.

* Pol. *ochreo-laccatus,* Mont. in Ann. des Sc. Nat. Oct. 1842.

Philippine Isles. *Cuming,* n. 1979.

The varnished coat of this species is so extraordinary that at first I was inclined to think it artificial.* It invests not only the pileus but the tubes themselves, and must, when the plant was gathered, have been moist, as the strong brown paper in which the specimens were wrapped adheres to the hymenium. I have now seen several specimens which are precisely in the same condition. It appears to me probable that the varnish is owing to an exusion from the tree at the point of growth, but even in this case, the species will remain good, the pores and manner of growth being very different from those of any state of *Pol. australis*, not to mention the pale ochraceous pileus.

6. Pol. (Apus) *tostus*, n. sp. dimidiatus, lignoso-coriaceus; pileo imbricato-confluenti lobato-multiplici tenui crebri-zonato, zonis hic illic elevatis radiatim rugosis, fusco variegato; basi effusâ; poris brevibus mediis angulatis, dissepimentis crassiusculis subacutis contextu que umbrino-pallidis.

Philippine Isles. *Cuming*, n. 2031.

Stemless, dimidiate imbricato-confluent from the division of the primary pileus about 6 inches broad, $3\frac{1}{2}$ inches long, variously lobed, thin, flexible in well grown specimens, but otherwise rigid, concentrically zoned and sulcate, with some of the zones elevated and rugged from radiating interrupted ridges; these are frequently proliferous, producing small but perfect pilei, whose hymenium is directed towards the point of attachment; base more or less effused. The whole is covered with a very thin hard cuticle of a rich red-brown, variegated with paler obscurely pruinose bands. Pores middle-sized, $\frac{1}{50}$ of an inch broad, shallow, pallid umber, like the substance, angular, often elongated and irregular from the oblique position of the pileus; dissepiments rather thick, subacute.

Belonging to the same group with *P. fraxineus*, but with an altogether different habit. I cannot point out any species to which it bears a very close resemblance. This, like P. ochreo-laccatus, was not described with the rest of the species collected by Mr. Cuming in consequence of its not being numbered. I have now, however, seen several specimens numbered as above.

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* Sir W. J. Hooker received a collection of Fungi from South Africa, almost every specimen of which had been varnished with a view to preserve it from insects.

7. Hydnum *Webbii,* n. s. totus resupinatus; subiculo effuso a matrice separabili crustaceo rigido fusco; aculeis brevibus conicis obtusiusculis plus minus seriatis cinereo-fuscis pruinosis.

Philippine Isles. *Cuming,* n. 2172.

Forming small, elongated, altogether resupinate patches, 2 inches or more long, thin, crust-like, separating easily from the matrix. Subiculum thin, very rigid, brown. Aculei very short, conical, slightly obtuse, not ciliated at the apex, arranged in irregular lines, cinereous-brown pruinose from short simple white flocci, which clothe the whole of the hymenium.

This species comes next to *H. squalinum* and *fusco-atrum,* like the former it approaches somewhat in character to Irpex. The spores are probably white. It occurs numbered as above in Mr. Webb's set of Cuming's Philippine collection. It does not exist in any of the other sets which I have had an opportunity of examining.

8. Thelephora *radicans,* n. s. pileo spathulato vel subinfundibuliformi sublobato, supra fulvo striatulo, subtus fuligineo; stipite valido radicante.

Surinam. *Hostmann,* n. 489.

Plant 1½ inch high, ¾ of an inch broad, spathulate or subfundibuliform, split on one side and slightly lobed, minutely striate, with raised lines, tawny, coriaceous. Stem ¾ of an inch high, 1½ line thick, incrassated at the base, and sending off strong branched roots. Hymenium nearly even, fuliginous; spores apparently fuliginous.

This is a far coarser species than *Thelephora aurantia,* to which it bears a slight resemblance, but differs in many respects. I have no doubt that in the recent plant the spores are fuliginous, but it is in general impossible to observe them accurately in dried specimens. The texture of the pileus is nearly that of *Thel. involuta,* Kl. I have seen fine specimens of the present species in Dr. Montagne's collection marked Splitgerber, n. 1284. This species was not in the set of Hostmann's Fungi described in a former volume.

* Aseroe *rubra,* Labill.—Aseroe pentactina, *Endl. Atakt. t.* 50. *Iconogr. Gen. Pl. cum Ic.* (Ic. Nostr. Tab. V. A.) Sydney, N. S. Wales, *Mr. Ludwig Leichardt.*

Mr. Leichardt has communicated to Sir W. J. Hooker a drawing and description made from the recent plant of this remarkable Fungus, and we gladly avail ourselves of the opportunity of laying the one and the other before the public, (See Tab. V. A.). "The pileus," Mr. Leichardt observes, "is divided into 8 rays, each of which is forked; the divisions being acuminated and slightly twisted. The centre of this pileus is perforated by a rather large irregular aperture, by means of which there is a communication with the cavity of the stipes and the atmosphere. A dark brownish moist matter covers the upper surface of the disc. The rays are of a fine bright scarlet above, while the under surface and stipes are of a pale rose-colour. An attentive observation with a lens exhibits minute openings, one at the base of each ray, which communicates with larger holes immediately beneath the upper layer of the disc, (*f.* 4.) The stipes, about 1½ in length,* is hollow, as shown in the transverse section at *f.* 6, the walls being composed of a simple series of longitudinal cells, which enlarge upwards towards the disc, as shown at *f.f.* 4 and 5. The stipes is at the base surrounded by the volva to half its length. In making a vertical section of the volva (*f.* 2.) an external and internal membrane are readily distinguished, between which a mucous substance is lodged. On the inner membrane, from the point of connection of the base of the stipes and volva, seven whitish bands radiate. The roots are cylindrical, of loose tissue, anastomosing with each other.

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* The figure, which is said to be of the natural size, represents a longer stipes.—Ed.

"This singular Fungus was found in the government demesne by Lieut. Lynd, Barrack Master at Sydney, growing early in April on rotten wood, not fifteen yards from the seaside."

TAB. V. A. *Aseroe rubra.—Fig.* 1. Plant, *nat. size*; *f.* 2. vertical section of the volva, *ditto*; *f.* 3. transverse section of the same, *ditto*; *f.* 4. a vertical section of a portion of the disc and of the ray, showing the small aperture leading into the large cavity, *mag.*; *f.* 5. vertical section of the cells of the stipes enlarging upwards, *mag.*; *f.* 6. transverse section of the stipes, *nat. size.*; *f.* 7. transverse section of a portion of the disc and ray, showing the parietes of the large cells of the former, with wavy lines, *mag.*

9. Aseroe *viridis*, Berk. et Hook. fil.; volvâ globosâ sublobatâ; stipite transversim rugoso, à receptaculo omnino discreto; radiis subtus lævibus, sulco divisis; stipite receptaculoque viridibus. (TAB. V. B.) Clay banks on hills near Kai Patika, Bay of Islands, New Zealand. *J. D. Hooker, Esq. M.D.*

Volva globose, ¾ of an inch broad, thick, dirty white, slightly and obtusely lobed. Stem 1 inch high of a metallic green as well as the receptacle, attenuated below, gradually increasing upwards, ⅓ of an inch thick at the top, wrinkled transversely, especially above, separated from the fructifying rays by a distinct groove. Receptacle horizontal, divided into 7-8 rays almost to the point of its connection with the stem. Rays much attenuated, forked, almost plain and smooth beneath, with a strong groove leading downwards from the point of division till it reaches the base, and then curving round on either side to the bifurcation of the neighbouring ray, convex above, their extremities extremely attenuated and cirrhose; at the base of each is seated a distinct wart-like rugulose body which supports the fructifying mass; and in the centre, an orbicular body with a small perforation leading into the cavity of the stem; each fructifying mass has a minute pore above.

This appears to be quite distinct from *Aseroe rubra*; differing from that species in colour, in the transversely wrinkled stem; and in the receptacle, whose rays are grooved beneath, not being confluent with the stem. The number of rays is very variable in this genus; it appears therefore that Aseroe pentactina, Endlicher, is not to be distinguished from A. rubra. It will be seen in Bauer's figure of A. pentactina, that the receptacle is perfectly confluent with the stem, and that the cells of the rays are similar to those of the stems. This is by no means the case in the present species. Each half ray is connected with its neighbour by a distinct groove, whence it would almost seem as if the bifurcate rays arose from the confluence of two neighbouring half rays, presenting a sort of analogy to the staminal crown in *Asclepiadia.* This, however, is perhaps rather apparent than real, though it presents one of those curious resemblances which are so striking in every division of organized beings.

TAB. V. B.—Aseroe viridis; *f.* 1. Plant, *nat. size.*; *f.* 2. the same with the volva cut through, *ditto.*

BROOMEIA, n. g.

Peridium duplex, utrumque persistens; *exterius* incompletum, confluendo stromatiforme individuorum plurimorum commune, suberosum, ab *interiore* papyraceo apice fimbriato dehiscente cujus basin tantum investit discretum. *Capillitium* laxum, peridio undique adnatum; *sporæ* inspersæ echinulatæ; *flocci* nodosi.—Fungus *gregarius, odorus massam confertam ex individuis plurimis constantem efformans quorum singulorum basis in peridio exteriori communi immergitur, sed puncto tantum affigitur. Nomen dedi in honorem amicissimi,* C. E. Broome, *armigeri,* Tuberacearum Anglicarum *accuratismi indagatoris, cujus pene solius laboribus extant hodie viginti species indigenæ fungorum hypogæorum.*

10. Broomeia *congregata,* n. s. (TAB. VI. A.)

On rotten wood. Found in the district of Albany, C.B.S. by *Mr. J. Backhouse,* 1838.

Forming a mass 5-6 inches in diameter, consisting of above 150 individuals. The external peridium is represented by an uniform corky stroma ¼ of an inch thick, of a pinkish grey, investing the matrix, and common to the whole mass. On the surface of this, and sunk into it to about a fourth part of their height are crowded the numerous slightly oblong individuals, but perfectly distinct from it except at the very base, where there is not the slightest trace of a peduncle. Interior peridium $\frac{5}{12}$ of an inch high, $\frac{4}{12}$ broad, paper-like, minutely granulated above, where it is of a rich chestnut brown when moist, paler with a pinkish tinge below. Orifice beautifully fimbriated, seated in a slightly depressed circular disc. Capillitium converging from the inner walls towards the centre; flocci simple, slightly nodose, through their whole length inarticulate, without any trace of an internal membrane ; spores abundant red-ochre globose or slightly angular echinulate, containing a subglobose variously sized nucleus. The corky base consists of irregular branched anastomosing inarticulate threads. When fresh or moistened it exhales a strong scent of aniseed, and presents when cut an appearance somewhat like that of the flesh of *Fistulina hepatica.*

No genus can be more distinct. Its affinities with *Geaster* are so striking that they need scarcely be indicated. It is to W. H. Harvey, Esq. that I am indebted for my specimen.

TAB. VI. A. *Fig.* 1. Broomeia *congregata*, *nat. size* ; *f.* 2. section of ditto, *slightly mag.* ; *f.* 3. flocci and spores, *mag.* ; *f.* 4. spores and flocci *magnified* 780 *diameters*, after a sketch by Dr. Montagne ; *f.* 5. flocci of stroma, *mag.*

* Sphæria (Connatæ) *cœnopus*, Fr.

Cuming. Philippine Islands, n. 2163.

I have seen no specimen from this locality except in Mr. Webb's set of the Philippine collection.

Notes on MIMOSEÆ, *with a Synopsis of Species. By* GEORGE BENTHAM, ESQ.

Tribe III. ACACIEÆ.

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Continued from p. 122 of the present volume.

XXV. PITHECOLOBIUM, *Martius.—Ingæ Hymenæodeæ et Samaneæ, DC. excl. spec. nonnull.*

Flores hermaphroditi, rarius polygami. Calyx campanulatus, 2-5-dentatus. Corolla tubulosa v. infundibuliformis. Stamina indefinita, sæpius numerosa, corolla duplo v. pluries longiora, basi in tubum coalita. Legumen compressum v. planum, contortum v. falcatum, rarius fere rectum, valvulis coriaceis v. carnosis margine vix incrassatis, dehiscentia sæpe tortis nec revolutis. Semina in pulpa tenui rarius evanida nidulantia, funiculo filiformi sæpe in arillam carnosam expanso.—Frutices v. arbores regionum calidiorum utriusque orbis incolæ, inermes v. stipulis spinescentibus v. spinis axillaribus armata. Folia bipinnata, glandulifera, glandulis nempe jugalibus inter pinnas v. foliola suprema v. omnia, petiolari nunc parva ad basin v. ad medium petioli, nunc in sectionibus pluribus nulla. Flores in capitula globosa v. oblonga, rarius in spicas cylindricas dispositi, albi v. rarius purpurei, vulgo quàm in *Calliandra* minores graciliores. Spicæ v. capitula solitarie v. fasciculatim pedunculata, rarius subsessiles, in axillis foliorum superiorum v. in paniculas terminales disposita.

This genus was first established by Martius (Herb. Fl. Bras. p. 114), to include those species of *Inga* of Willdenow and De Candolle, which have a twisted pod, and the seeds enclosed in a fleshy arillus, and which appeared to him to be marked by a peculiar habit; but upon an examination of all the species of which I have obtained the fruit, I find it difficult to assign any positive limits without extending it to many species deprived of the arillus, and even to

some with a nearly straight fruit. *Pithecolobium* would thus include all monadelphous *Mimoseæ* with indefinite stamens, bipinnate leaves, and fleshy or pulpy pods, excepting those few species which I have followed Martius in referring to a distinct genus, under the name of *Enterolobium*.

The distinction thus formed between *Pithecolobium* and *Inga*, rests, it is true, chiefly upon the foliage, which is always simply pinnate in *Inga* and *Affonsea*, and bipinnate in *Pithecolobium*, although the number of pinnæ and leaflets be sometimes reduced to a single pair of each, and even, in one instance, to a single foliole on each pinna. This peculiarity of foliage is, however, of considerable importance in *Leguminosæ*, and moreover, the fruit of the true *Ingas* is generally much thicker and more fleshy, never twisted, and always has a remarkably thick margin. *Pithecolobium* is more decidedly distinguished by the pod from *Albizzia* and *Calliandra*, but is not always so readily known from them when in flower. All the species have glandular petioles, which are scarcely ever to be seen in *Calliandra*, and may generally serve as a mark for the American sections; and amongst the Asiatic sections, *Concordia* may be known from *Albizzia* by the spines, and *Clypearia* by the peculiar inflorescence. It is only the few species of *Cathormion* that may be doubtful in the absence of fruit. The small flowers of *Unguis-Cati*, the spinescent stipules of *Unguis-Cati* and *Concordia*, the inflorescence of *Caulanthon* and the tubular flowers of *Caulanthon* and *Chloroleucon* are also very different from what is observable either in *Albizzia* or *Calliandra*.

As the groups into which the genus may be divided are much more distinct from each other than those which I have adopted in *Acacia* and *Calliandra*, and may be considered as so many distinct genera, I have described them as substantive sections, of which the following are the principal characters.

I. UNGUIS-CATI.—Stipulæ nonullæ v. omnes spinescentes. Pinnæ 1-rarius 2-jugæ. Foliola 1-3-juga. Legumen lineare, tortum.—Species 1-13, omnes Americanæ.

II. Concordia.—Stipulæ nonnullæ v. omnes spinescentes. Spinæ etiam hinc inde axillares. Pinnæ 1-2-jugæ. Foliola 3-pluri-jugæ. Legumen lato-lineare, cochleatum.—Species 14-16, omnes Asiaticæ.

III. Abaremotemon.—Inermes. Pinnæ pluri-rarius unijugæ. Foliola plurijuga. Pedunculi non supraspositi. Legumen cochleatum.—Species 17-25, omnes Americanæ.

IV. Clypearia.—Inermes. Pinnæ et foliola uni-plurijuga. Capitula paniculata, ramis paniculæ pedunculisque lateraliter et supraposite fasciculatis. Legumen latum cochleato-contortum margine exteriore sæpe sinuato. — Species 26-34, Asiaticæ v. Polynesicæ.

V. Cathormion.—Inermes. Folia *Clypeariæ.* Pedunculi in axillis v. in panicula solitarii v. rarius subfasciculati. Legumen moniliforme, rectum v. cochleato-contortum. Species 35-39, Polynesicæ.

VI. Caulanthon.—Inermes. Pinnæ 1-rarius 2-jugæ. Foliola ampla, solitaria v. 1-pluri-juga. Pedunculi in ramis annotinis breves fasciculati. Legumen rectum falcatum v. contortum, planum, subbivalve, marginibus leviter incrassatis.—Species 40-50, Americanæ.

VII. Samanea.—Inermes. Pinnæ et foliola multijuga. Inflorescentia axillaris, paniculata, v. corymbosa, pedunculis non suprapositis. Legumen rectiusculum v. arcuatum nec cochleatum.—Species 51-68, Americanæ.

VIII. Chloroleucon.—Spinæ hinc inde axillares. Stipulæ membranaceæ v. obsoletæ. Pinnæ et foliola pluri-multijuga. Pedunculi axillares, solitarii v. gemini. Legumen falcatum, crassum, coriaceo-carnosum, intus septatum.—Species 69-75, Americanæ.

Sect. I. Unguis-Cati. — Stipulæ nonnullæ v. omnes spinescentes. Pinnæ unijugæ v. valde inæqualiter bijugæ. Foliola 1-3-juga, cujusve paris subæqualia. Glandulæ jugales. Pedunculi solitarii v. 2-3-natim fasciculati, non suprapositi, inferiores sæpius axillares, superiores v. fere omnes racemosi, racemis sæpius paniculato-ramosis. Ovarium stipitatum. Legumen lineare, circinnato-contortum, valvulis convexis intus sæpe rubescentibus, dehiscentia varie tortis. Semina arilla carnosa semi-immersa.—Species omnes Americanæ, una tamen in hortis Asiaticis introducta. Flores albi v. rosei parvi.

* *Pinnis foliolisque unijugis, floribus spicatis.*

1. P. *macrostachyum*, glabrum v. vix minutissime puberulum, stipulis spinescentibus rectis v. rarius obsoletis, foliolis oblique ovato-oblongis sublanceolatisve, spicis elongatis, calyce 5-dentato corolla pubescente vix triplo breviore.—*Inga lanceolata*, Humb. et Bonpl., Kunth, Mim. t. 15; *Mimosa macrostachya*, Vahl. Ecl. t. 26; *Inga macrostachya*, DC. Prodr. 2, p. 437; *Inga ligustrina*, Willd.? Spec. 4, p. 1007, (*Mimosa ligustrina*, Jacq. non Vahl.); *Inga hymeneæfoliæ proxima*, Ch. Schl. Linnæa 5, p. 592.—Foliola 1-2-pollicaria. Spicæ subinterruptæ, nunc vix bipollicares, nunc usque ad 4-5 poll. longæ. Bracteolæ lanceolatæ, brevissimæ v. interdum corollas subæquantes.—Near Vera Cruz, *Galeotti*, n. 3252; *Linden*, n. 1318, *Schiede* and others; Manzanilla Bay, *Barclay*; Cumana, *Humboldt* and *Bonpland*; on the Magdalena, *Hartweg*, n. 965; Guiana? *Anderson*; Cayenne, *Vahl.*

2. P. *hymeneæfolium*, ramulis petiolisque glabris, stipulis spinescentibus, foliolis oblique oblongis glabris, spicis densissimis elliptico-oblongis, floribus adpresse pubescentibus, calyce 5-dentato corolla triplo breviore, ovario piloso.—*Inga hymeneæfolia*, Humb. et Bonpl. in Willd. Spec. 4, p. 1008.—Species mihi ignota. Folia sec. Kunth, 3-4-pollicaria. Spicæ 1-1½ poll. longæ.—Shady woods near Caripe, in Cumana, *Humboldt* and *Bonpland*.

3. P. *oblongum* (sp. n.), ramulis petiolisque glabris, stipulis spinescentibus, foliolis oblique ovatis v. ovali-oblongis glabris, spicis laxiusculis cylindraceo-oblongis pedunculatis, floribus adpresse pubescentibus, calyce 5-dentato corolla

subtriplo breviore, ovario glabro.—Foliola 1-2-pollicaria. Spicæ pollice breviores.—Western coast of Columbia, *Cuming*, n. 1155, *Sinclair*.

** *Pinnis foliolisque unijugis, floribus globoso-capitatis.*

4. P. *dulce*, glabrum v. vix canescenti-puberulum, stipulis spinescentibus brevibus, foliolis dimidiato-obovatis oblongisve obtusis, capitulis breviter nunc brevissime pedunculatis canescentibus, calyce 5-dentato corolla triplo breviore, ovario villoso.—*Mimosa dulcis*, Roxb. Pl. Corom. t. 99; *Inga dulcis*, Willd. Spec. 4, p. 1005; *Inga pungens*, Humb. et Bonpl. Willd. Spec. 4, p. 1004; *Mimosa Unguis-Cati*, Blanco Fl. Filip. p. 731, non Linn.; *Inga Javana*, DC.? Prodr. 2, p. 436. —Arbor procerrima. Foliola subpollicaria. Capitula staminibus neglectis magnitudine pisi, in pedunculis vix semipollicaribus secus ramos paniculæ v. rarius in axillis foliolorum solitaria v. fasciculata. Legumen torulosum, circinnatum, valvulis intus rubris, pulpa eduli repletum. Semina atra, nitida, arillo semi-immersa.—In the hot regions of Mexico, *Schiede*, *Beechey*, *Hinds*, *Galeotti*, n. 3140, and introduced from thence to the Philippine Islands, *Blanco*, and from those islands into East India, *Roxburgh*.

5. P. *pubescens* (Benth. in Hook. Journ. Bot. 2, p. 141), ramulis angulatis petiolisque pubescentibus, stipulis parvis induratis hinc inde breviter spinescentibus, foliolis oblique ovali-ellipticis oblongisve coriaceis utrinque pubescentibus v. supra demum glabratis, capitulis globosis pedunculatis, calyce tomentoso 5-dentato corolla tomentosa subquadruplo breviore, ovario villoso.—*Inga pubescens*, Bert. in DC. Prodr. 2, p. 437; *Inga paniculata*, Spreng. in DC. l. c.; *Mimosa monilifera*, Bertol.? Fl. Guatem. p. 41.—Foliola 1-2-pollicaria, rarius majora. Inflorescentia fere P. *dulcis*. Flores majores, rosei.—British Guiana, *Schomburgk*, n. 750, Barranquillas, *Bertero*.

6. P. *forfex*, ramulis petiolisque glabris, stipulis parvis induratis hinc inde breviter spinescentibus, foliolis oblique oblongis obtusis v. acutiusculis subcoriaceis glabris, capitulis

subglobosis longiuscule pedunculatis, floribus breviter canotomentosis, calyce 5-dentato corolla subquadruplo breviore, ovario glabro.—*Inga forfex*, Kunth, Mim. t. 16; *Mimosa rosea*, Vahl. Ecl. 3, p. 33, t. 25.—A P. *pubescenti* differt præcipue glabritie, pedunculis longioribus et ovario glabro. Legumina valde torta, vix 2 lin. lata. Carthagena in Columbia, *Billberg*; Trinidad, *Lockhart.*

7. P. *Unguis-Cati*, ramulis petiolisque glabris, stipulis parvis induratis nunc brevissimis muticis nunc spinescentibus, foliolis late et oblique obovatis orbiculatisve obtusissimis glabris, capitulis globosis longiuscule pedunculatis, floribus glabris v. vix minute tomentellis, calyce 5-dentato corolla vix triplo breviore, ovario glabro.—*Inga Unguis-Cati*, Willd. DC. Prodr. 2, p. 436; *Inga Guadalupensis*, Desv. DC. Prodr. 2, p. 436.—Species sequenti affinis et forsan non immerito cum illâ à Linnæo juncta. Foliola tamen duplo majora, proportione latiora, corollæ ampliores breviores, spinæ breviores nonnunquam obsoletæ.—Common in the West Indies.

8. P. *microphyllum*, ramulis petiolisque glabris, stipulis longiuscule spinescentibus, foliolis oblique oblongis ovatisve obtusissimis glabris, capitulis globosis longiuscule pedunculatis, floribus glabris, calyce corolla quadruplo breviore, ovario glabro.—*Inga microphylla*, Humb. et Kunth, Nov. Gen. 6, p. 293.—Frutex glaberrimus. Foliola semipollicaria, v. majora 9 lin. longa. Pedunculi subpollicares. Corollæ 3 lin. longæ. Legumina valde torta, 4-5 lin. lata.—West Indies; Cumana, *Humboldt* and *Bonpland*; Guayaquil, *Hall.*

9? P. *spinifolium*, "caule ramosissimo, spinis stipularibus subconicis, petiolis pubescentibus glanduliferis, foliis conjugato-pinnatis, foliolis oblique rotundatis nervosis subtus pubescentibus apice recurve acuminatis spinulosis, floribus capitatis, calycibus pubescentibus, leguminibus tenuiter tomentosis tortilibus."—*Inga spinifolia*, Desv. Ann. Sc. Nat. Ser. 1, v. 9, p. 426.—Species mihi ignota, ex cl. Desv. juxta *Ingam* (*Pithecolobium*) *Unguis-Cati* collocanda. An P. *circinnale*?—West Indies, *Desvaux*.

*** *Pinnis foliolisque subbijugis.*

10. P. *circinnale*, glabrum, stipulis spinescentibus, pinnis uni-rarius bi-jugis, foliolis in pinna ultima 2-3-jugis in inferiore uni-jugis obovatis longe mucronatis, capitulis globosis longe pedunculatis, floribus minute tomentellis.—*Inga circinnalis*, Willd.? DC. Prodr. 2, p. 438; *Mimosa circinnalis* Linn.? Spec. p. 1499, non Cav.—The leaflets in the specimens I have seen, as in those described by De Candolle, are remarkable for their long almost prickly point, but Linnæus's character does not quite agree with them.—West Indies; St. Domingo, *Ehrenberg*, &c.

11. P. *candidum*, glabrum, stipulis spinescentibus, pinnis uni-rarius bijugis, foliolis bijugis v. in pinnis inferioribus uni-jugis oblique obovatis brevissime mucronulatis coriaceis, capitulis globosis pedunculatis 6-8-floris, calyce corolla tenui 6-7-plo breviore, ovarii glabri stipite brevi.—*Inga candida*, Humb. et Kunth, DC. Prodr. 2, p. 438.—Arbor parva, 1-2-orgyalis ex Humboldt et Bonpland, usque ad 25 pedes alta ex Hinds et Sinclair. Legumen circinnatum glabrum.—Plains near Guayaquil, *Humboldt* and *Bonpland, Hinds, Sinclair, Hartweg*, 657, &c.

12. P. *excelsum* (Mart. Herb. Fl. Bras. p. 115), ramis pubescentibus, stipulis spinescentibus, pinnis 1-2-jugis, foliolis bi-jugis v. in pinnis inferioribus uni-jugis oblique ellipticis submucronatis membranaceis puberulis, capitulis globosis louge pedunculatis paucifloris, calyce corolla tenui puberula octuplo breviore, ovarii glabri stipite elongato.—*Inga excelsa*, Kunth, Mim. t. 18, DC. Prodr. 2, p. 439.—Arbor procerrima, cæterum P. *candido* valde affine. Legumen circinnatum puberulum. Species à me non visa.—Banks of the Magdalena, near Tomependa, *Humboldt* and *Bonpland.*

13. P. *diversifolium* (sp. n.), ramulis petiolisque pubescentibus, stipulis spinescentibus, pinnis 1-2-jugis, foliolis 2-3-jugis v. in pinnis inferioribus uni-jugis obovatis oblongisve utrinque pubescentibus, capitulis globosis pedunculatis, floribus pubescentibus, corolla calyce vix quadruplo breviore, ovarii glabri stipite elongato.—Ramuli tortuosi, dense foliati.

Foliola ultima 6-9 lin. longa, inferiora multo minora, petiolo communi quàm partiales multo breviore. Flores fere P. *candidi* sed calyces proportione multo majores. Legumen circinnatum, inter semina sæpius constrictum, tomentellum.—Province of Piauhy in Brazil, *Gardner*, n. 2554; Serra Jacobina, *Blanchet*, n. 2670.

Sect. II. Concordia. Stipulæ nonnullæ v. omnes spinescentes. Spinæ etiam hinc inde axillares. Pinnæ 1-2-jugæ. Foliola tri-plurijuga. Glandulæ jugales. Ovarium sessile v. subsessile. Legumen lato-lineare cochleatum.—Species omnes Indicæ. Flores purpurei.

14. P. *geminatum*, ramulis petiolisque puberulis, stipulis plerisque spinescentibus, pinnis unijugis, foliolis 2-5-jugis cum impari exteriore ad basin pinnæ obovato-oblongis valde inæquilateris glabris nitidis, pedunculis axillaribus, capitulis globosis, floribus sessilibus glabris, calyce corolla subtriplo breviore, ovario glabro.—*Inga geminata*, Wight et Arn. Prodr. Fl. Penins. Ind. Or. 1, p. 269. Annon ad sequentem reducendum?—Ceylon, *Wight*, *Mackenzie*, &c.

15. P. *nitidum*, ramulis petiolisque pubescentibus, stipulis spinescentibus, pinnis bijugis, foliolis 4-5-jugis cum impari exteriore ad basin pinnæ oblique oblongis mucronatis glabris nitidis, capitulis globosis.—*Mimosa nitida*, Vahl. Symb. 2, p. 103. *Acacia nitida*, Willd. Spec. 4, p. 1086. *Inga Koenigii*, Wight et Arn. Prodr. 1, p. 269.—East India, *Koenig*. I have not seen this species, unless, as suspected by Arnott, it be the same as the last.

16. P. *umbellatum*, ramulis petiolisque puberulis, stipulis parvis demum induratis brevissime pungentibus, spinis hinc inde axillaribus validis, pinnis 1-2-jugis, foliolis plerisque 8-10-jugis cum impari brevi exteriore ad basin pinnæ oblique oblongis obtusis plurinerviis glabris, pedunculis axillaribus in ramulis brevissimis subfasciculatis, floribus in capitulis globosis pedicellatis glabriusculis, calyce corolla subtriplo breviore, ovario sessili.—*Inga umbellata*, Willd. DC. Prodr. 2, p. 439; *Inga concordiana*, DC. Prodr. 2, p. 441.—East Indian Peninsula.

SECT. III. ABAREMOTEMON. Arbores inermes. Stipulæ inconspicuæ. Pinnæ et foliola pluri-v. multijuga, rarissime unijuga. Glandulæ jugales. Pedunculi solitarii v. 2-3-ni, non suprapositi, axillares v. subracemosi. Legumen latum, cochleato-contortum.—Species omnes Americanæ. Flores albi.

The more numerous folioles and pinnæ and the total want of spines, easily distinguish this section from the two preceding ones; the following ones are known by their inflorescence, or their flowers, excepting *Samanea*, which only differs from *Abaremotemon* in the pod, insomuch that all those species of which the fruit is unknown, can only be referred to the one or the other, from their apparent affinity to others whose pod has been described.

* *Paucifoliolatæ, foliolis infra* 10-*jugis.*

17? P. *cochleatum* (Mart. Herb. Fl. Bras. p. 115), glabrum, pinnis subunijugis, foliolis trijugis ellipticis acuminatis nitidis, glandula obscura inter omnia paria, pedunculis solitariis geminisve, floribus pedicellatis glabris, legumine cochleato margine exteriore repando.—*Inga cochleata*, Willd. Spec. 4, p. 1020; Parà, *Willdenow*.—This species is unknown to me. From Willdenow's description, it would appear to be very near to P. *umbellatum*, but is said to be unarmed, and a native of America.

18. P. *lætum* (sp. n.), ramulis petiolisque ferrugineo-villosis, pinnis 1-2-jugis, foliolis unijugis amplis obovalibus v. elliptico-oblongis acuminatis basi parum obliquis utrinque ad venas villosulis cæterum glabris, floribus sessilibus apice rufo-barbatis, corolla calyce triplo longiore, ovario sessili glabro. —*Inga læta*, Pœpp. MSS.—Rami scandentes? glabrati. Pili partium juniorum breves, patentes, ferruginei. Foliola usque ad 4 poll. longa. Glandulæ oblongæ majusculæ parum elevatæ et vix nisi glabritie conspicuæ. Stipulæ setaceæ, cito deciduæ. Pedunculi sub-bipollicares. Flores fere *Calliandrarum*. Calyx 1 lin. longus. Stamina ultra-pollicaria. Legumen semipedale, 6-8-lin. latum, falcatum v. demum contor-

tum, valvulis 2 coriaceis intus rubentibus dehiscens, marginibus incrassatis, exteriore plus minus sinuato.—Maynas in Brazil, *Pœppig.*

19. P. *Auaremotemo* (Mart. Herb. Fl. Bras. p. 115), glabrum v. ramulis novellis minute glanduloso-puberulis, pinnis 2-3-rarius 4-jugis, foliolis 2-3-jugis ovatis rhombeisve, capitulis globosis, calyce dentato corolla glabra triplo breviore, ovario sessili glabro, legumine lato cochleato —*Inga nandinæfolia,* DC. Prodr. 2, p. 440. *Mimosa cochliocarpa,* Gom. DC. Prodr. 2, p. 430. *Inga cochlocarpos,* Mart. Reise 1, p. 549. *Mimosa vaga,* Vell. Fl. Flum. 11, t. 13.—Arbor 30-40-pedalis. Stipulæ ad tuberculum brevem reductæ v. obsoletæ. Folia et inflorescentia siccitate nigricantia, Glandulæ parum conspicuæ, subimmersæ. Foliola 1-2 poll. longa. Calyx 1 lin., corolla 3 lin. longa. Legumen anfractibus 2-4 cochleatum, ½ poll. latum, valde compressum, valvulis margine breviter incrassatis. Semina arillata.—Woods and waters of tropical Brazil, in the provinces of Rio Janeiro, Bahia, Pernambuco, and Cearà, *Martius, Pohl. Sello, Lhotsky,* &c.

20. P. *gummiferum* (Mart. l. c. p. 116), glabrum, pinnis 2-3-jugis, foliolis 5-7-jugis angusto-ellipticis subtus venosis glaucis, capitulis globosis, floribus pubentibus, calyce corolla duplo breviore, legumine bis torto.—Deserts of Bahia and Minas, *Martius.* Unknown to me.

21. P. *trapezifolium* (Benth. in Hook. Journ. Bot. 2, p. 142), ramulis petiolisque ferrugineo-tomentellis glabratisve, pinnis 2-4-jugis, foliolis pinnarum inferiorum paucijugis, ultimarum 6-8-jugis rhombeo-ovatis valde obliquis glabris v. junioribus subtus ferrugineo-tomentellis, capitulis globosis, floribus ferrugineo-tomentosis, calyce campanulato corolla duplo breviore, ovario subsessili villoso, legumine lato-lineari cochleato.—*Mimosa trapezifolia,* Vahl. Ecl. 3, t. 28; *Inga trapezifolia.* DC. Prodr. 2, p. 441.—Trinidad, *Vahl ;* British Guiana, *Schomburgk,* n. 284; French Guiana, *Martin ;* Surinam, *Hostmann,* n. 479.

22. P. *lusorium,* ramulis petiolisque ferrugineo-tomentellis, pinnis 2-5-jugis, foliolis 3-6-jugis oblique rhombeo-obovatis glabris v. junioribus subtus tomentellis, pedunculis

rigidis folio longioribus, capitulis ovato-globosis, floribus ferrugineo-tomentellis, calyce tubuloso-campanulato brevissime dentato corolla duplo breviore, ovario subsessili villoso, legumine lato-lineari falcato subcontorto.—*Mimosa lusoria,* Vell. Fl. Flum. 11, t. 14. *Inga brachystachya,* DC.? Prodr. 2, p. 440.—Præcedente simillimum, at floribus diversum. Foliola minus obliqua et sæpius obtusiora. Pedunculi longiores. Capitula minus compacta, floribus infimis sæpe remotis. Cor. 3 lin. longa. Legumine ex icone citata latiora et multo minus contorta.—Brazil, *Sello.*

** *Multifoliolatæ, foliolis ultra* 15-*jugis.*

23. P. *cyclocarpum* (Mart. Herb. Fl. Bras. p. 115), pinnis 4-9-jugis, foliolis 20-30-jugis exterioribus majoribus acuminatis basi truncatis, glandula in medio petiolo, capitulis globosis, legumine cochleato margine exteriore sinuato.—*Inga cyclocarpa,* Willd. Spec. 4, p. 1026.—Ex descriptione brevi videtur sequenti affine.—Caraccas, *Jacquin.*

24. P. *filicifolium,* ramulis petiolis pedunculisque ferrugineo-tomentellis, pinnis 8-12-jugis, foliolis 20-30-jugis oblique falcato-oblongis obtusiusculis glabris v. minute ciliatis supra nitidis subtus pallidis, capitulis dense globosis, calyce tubuloso apice ferrugineo-piloso corolla tenui triplo breviore, staminum tubo corollam æquante, ovario sessili glabro, legumine contorto.—*Mimosa arborea,* Sw. Obs. p. 390, non Linn. (quæ *Acacia villosa*) nec Mill (*Albizzia Julibrissin*), *Acacia arborea,* Willd. et Auct. ex parte. *Mimosa filicifolia,* Lam. Dict. 1, p. 13.—Foliola 3-4 lin. longa. Calyces lineam longi, membranacei. Corolla 3 lin. longa, tenuiter infundibuliformi-tubulosa. Legumen (quod ipse non vidi) teretiusculum dicitur, arcuato-contortum.—Xalapa, *Galeotti*; Jamaica, *Distin.*

25. P. *Langsdorfii* (sp. n.), ramulis petiolis pedunculisque minute tomentellis, pinnis 5-7-jugis, foliolis 15-25-jugis oblique falcato-oblongis obtusiusculis glabris supra nitidis subtus albidis, capitulis ovato-globosis v. interrupte oblongis, floribus ferrugineo-tomentellis, calyce corolla vix duplo bre-

viore, staminum tubo incluso, ovario sessili glabro, legumine arcuato-contorto margine exteriore sinuato.—Species habitu P. *incuriali* et P. *Martiano* similis, fructu P. *filicifolio* affinis, foliolis siccitate supra nigrescenti-nitidis subtus pallidissimis insignis. Foliola 3 lin. longa. Calyx turbinatus 2 lin. Corolla 3½ lin. longa. Legumen 4 lin. latum, valvulis intus rubentibus post anthesin valde tortis. Semina exarillata. —High mountains in Minas Geraes, *Langsdorff*; Brazil, *Sello*.

SECT. IV. CLYPEARIA. Arbores inermes. Stipulæ inconspicuæ v. deciduæ. Pinnæ et foliola uni-plurijuga. Glandula in medio v. prope basin petioli, jugales inter pinnas v. foliola superiora rarius ad omnia juga, v. rarissime deficientes. Capitula parva numerosa ample paniculata, ramis paniculæ pedunculisque lateraliter et superposite fasciculatis. Ovarium stipitatum. Legumen latum, cochleato-contortum, margine exteriore sæpius sinuato, valvulis coriaceis sublignosum. Semina in nonnullis (an in omnibus?), exarillata.—Species omnes Indicæ v. Polynesicæ. Flores albi.

Though variable as to foliage, the species of this section are readily known by the remarkable way in which the branches of the panicle and peduncles are inserted, several together, one immediately above the other, in vertical lines. The flowers are much like those of the small-flowered *Albiziæ*, the pod is nearly that of *Abaremotemon*, but usually broader and more sinuate, and in the few cases where I have seen the seed, it appears to be destitute of any fleshy arillus.

* *Pinnis* 1-2-*jugis, foliolis amplis* 2-4-*jugis, ovario glabro.*

26. P. *bigeminum* (Mart. Herb. Fl. Bras. p. 115), ramulis petiolisque tomentellis demum glabratis, pinnis 1-2-jugis, foliolis 2-4-jugis ovatis oblongisve acuminatis demum glabris, glandula in medio petiolo, floribus puberulis in capitulo paucis sessilibus, calyce corolla duplo breviore 5-dentato, legumine cochleato margine exteriore integro.—*Mimosa bigemina*, Vahl. Symb. 2, p. 103 an Linn.? *Inga bigemina*,

Willd. Spec. 2, p. 1007. *Inga lucida*, Wall. Cat. Herb. Ind. n. 5267 B. excl. litt. cæt. *Inga Wightiana*, Grah. in Wall. l. c. n. 5281, *Inga annularis*, Grah. in Wall. l. c. n. 5269.—Arbor elata. Foliola 2-3-pollicaria. Glandulæ variæ, nunc latæ depressæ, nunc parvæ elevatæ, nunc jugales omnino deficientes. Bracteæ sub panicula et ramis uti in specibus plerisque sequentibus sæpius ad petiolum brevem glanduliferum reductæ. Calyx 1 lin., corolla 2 lin. longa, campanulata, basi attenuata, semi-5-fida. Stamina semipollicaria. Legumen bis tortum, valvulis 9 lin. latis.—Mountains of Nipal and to the N.E. of Bengal, *Roxburgh, Wallich*, &c. also in the Peninsula, *Wight, Heyne*, &c.

β? bubalina, petiolis partialibus eglandulosis.—*Inga bubalina*, Wall. Cat. Herb. Ind. n. 5272, an Jack. in Hook. Comp. Bot. Mag. 1, p. 225, excl. fr.?—Penang, *Wallich*. These specimens are in flower only, and in that state only differ from the continental specimens in the absence of all glands between the leaflets. They agree also with Jack's character in all but the fruit, which he describes as so very different from that of any other *Mimoseous* plant, that one cannot help suspecting he must have had before him the pod of some *Cassia*, near C. *fistula*.

Mimosa Saponaria, Lour. Fl. Cochin. p. 653, or *Inga Saponaria* of Willdenow and De Candolle must be near to P. *bigeminum*, if a Mimoseous plant at all. But this point is very doubtful, as Loureiro did not see either flower or fruit; and he says the leaves are sometimes simply, sometimes doubly pinnate, a circumstance hitherto unknown amongst *Mimoseæ*.

27. P. *lucidum*, ramulis petiolisque ferrugineo-tomentosis, pinnis 1-2-jugis, foliolis 2-4-jugis ovatis oblongisve acuminatis demum glabris, glandula in medio petiolo, floribus sericeo-pubescentibus in capitulis densis sessilibus, calyce truncato corolla duplo breviore, legumine (cochleato?) margine exteriore sinuato.—*Inga bigemina*, Hook. et Arn. Bot. Beechey, p. 182.—P. *bigemino* affine. Flores in capitulo 15-20. Leguminis valvulæ pollicem latæ.—China, near Macao, *Beechey*.

28. P. *lobatum*, glabrum, pinnis unijugis, foliolis 2-3-jugis amplis ovali-oblongis v. ovato-lanceolatis acuminatis glaberrimis, glandula parva prope basin petioli, floribus puberulis in capitulo 2-3-nis sessilibus, calyce corolla dimidio breviore 5-dentato, legumine cochleato margine exteriore inter semina profunde lobato.—*Mimosa Jiringa*, Jack ex Hook. Bot. Misc. 1, p. 282. M. *Djiringa*, Roxb. Hort. Beng. M. *Kæringa*, Roxb. Fl. Ind. 2, p. 543. *Inga lobata*, Wall. Cat. Herb. Ind. n. 5280.—Arbor elata. Foliola 4-6 poll. longa, penninervia, infima cujusve pinnæ multo minora. Panicula depauperata, ramis pedunculisque minus quàm in affinibus suprapositis. Legumen ultra medium transverse divisum, lobis orbiculatis crassis 1-2 poll. diametro. Semina orbiculata, intra pulpam edulem nidulantia.—Burma territory, *Wallich*.

29. P. *fasciculatum*, ramulis petiolisque adultis glabris, pinnis unijugis, foliolis 2-3-jugis amplis ovali-oblongis glaberrimis, glandula magna obscura ad basin petioli, floribus in capitulis 3-5-nis sessilibus v. rarius solitariis adpresse pubescentibus, calyce corolla dimidio breviore, legumine latissimo cochleato margine integro.—*Inga Jiringa*, Wall. Cat. n. 5268.—Arbor parva. Ramuli subangulati. Foliola 6-8 poll. longa. Panicula ampla ramis pedunculatis insigniter superposite fasciculatis. Leguminis valvulæ sesquipollicem latæ. Semina ovata.—Penang and Singapore, *Wallich*. The specimens of this and some allied species are in some measure mixed in the E. Indian herbarium.

** *Pinnis bi-v. sæpius pluri-jugis, foliolis plurijugis, ovario sæpissime villoso.*

30. P. *angulatum*, ramis petiolisque novellis fusco-pubescentibus demum glabratis, pinnis 2-4-jugis, foliolis pinnarum inferiorum 2-3-jugis ovato, rhombeis acuminatis, superiorum 4-8-jugis ovali-oblongis acuminatis, glandula magna ad basin petioli, capitulis paucifloris, floribus pedicellatis tomentellis, calyce 5-dentato corolla infundibuliformi subquadruplo breviore, leguminibus cochleatis inter semina subcontractis.—

Inga acutangula, Grah. in Wall. Cat. n. 5271. *Mimosa heterophylla*, Roxb. Fl. Ind. 2, p. 545.—P. *clypeariæ* affine. Pinnæ sæpius bijugæ, foliola multo majora, superiora 3-4-pollicaria. Calyce proportione minores.—Sillet, Bengal and Penang, *Wallich.*

31. P. *clypearia*, ramulis petiolisque acutangulis novellis pubescentibus demum glabris, pinnis 4-6-jugis, foliolis pinnarum inferiorum 3-6-jugis, superiorum 10-12-jugis plerisque trapezoideo-ovatis obtusis acutisve, glandula ad basin petioli, capitulis paucifloris, floribus breviter pedicellatis tomentellis, calyce corolla infundibuliformi triplo breviore, leguminibus cochleatis extus sinuatis.—*Inga dimidiata*, Hook. et Arn. Bot. Beech. p. 181. *Mimosa trapezifolia*, Roxb. Fl. Ind. 2, p. 546. *Inga clypearia*, Jack, Wall. Cat. Herb. Ind. n. 5270, litt. *A* et *B*.—Arbor elata. Ramulorum anguli sæpe fere alati. Foliola infima vix pollicaria, superiora 1½ v. fere 2 poll. longa, lateralia valde inæquilatera, terminalia fere ovata et vix obliqua, omnia penninervia. Paniculæ rami angulati. Pedicelli singuli lineam fere longi. Corolla 2 lin. longa. Legumen bis terve cochleatum.—Sumatra, *Marsden*; China (near Macao), *Millet*, *Beechey*.

Jack's synonym is given after Wallich; his description also agrees with the specimens, except that he says the petiole or rhachis is eglandular, whereas I have always found glands on all the *Pithecolobia* of this section.

Blanco's *Mimosa scutifera, var. Casai, Malacamonsili, v. Alobahai* (Fl. Filip. p. 736), appears to be this species also, although no specimens of it were brought from the Philippine Islands by Cuming.

32. P. *montanum* (sp. n.), ramulis petiolisque angulatis fusco-pubescentibus, pinnis 7-10-jugis, foliolis pinnarum superiorum 12-20-jugis oblique ovato-oblongis falcatis acutiusculis subtus tomentellis, glandula magna ad basin petioli, capitulis paucifloris, floribus pedicellatis tomentellis, calyce 5-dentato corolla infundibuliformi triplo breviore, legumine cochleato extus sinuato.—*Inga montana*, Spanoghe in Herb.

Hook.—Hoc etiam P. *clypeariæ* affine est. Foliola multo numerosiora, pleraque 6 lin. longa, 2-3 lin. lata, fere quadrangula costa diagonali.—Java, *Spanoghe, Hoffmansegg.*

33. P. *contortum* (Mart. Herb. Fl. Bras. p. 115), ramulis petiolisque subteretibus fusco-tomentosis, pinnis 5-6-jugis, foliolis pinnarum superiorum 12-20-jugis oblique ovato oblongis obtusis subtus tomentellis, glandula ad basin petioli, capitulis 3-4-floris floribus sessilibus tenuissime tomentellis, calyce corolla subcampanulata triplo breviore, ovario glabriusculo, legumine cochleato extus sinuato.—*Inga contorta,* Wall. Cat. Herb. Ind. n. 5283, *A.*—Arbor. Foliola 6-9 lin. longa, valde inæquilatera. Glandulæ scutellæformes. Panicula multo minor et densior quàm in P. *clypearia.* Corolla 1½ lin. longa, limbo amplo. Legumen bis terve cochleatum. —Penang and Singapore, *Wallich,* etc.

34. P. *subacutum* (sp. n.), ramulis petiolisque subteretibus, novellis fusco-tomentosis, pinnis 5-7-jugis, foliolis pinnarum superiorum 15-20-jugis oblique trapezoideo-ovatis acutis acuminatisve subtus puberulis, glandula prope basin petioli, capitulis paucifloris, floribus subsessilibus tomentosis, calyce corolla dimidio breviore.—P. *contorto* habitu affine. Foliola minora, in acumen semper producta, siccitate nigricantia. Flores majores quàm in P. *contorto.* Calycis dentes breves, acuti, patentes. Corolla 3 lin. longa. Legumen non vidi. —Philippine Islands, *Cuming,* n. 502.

SECT. V. CATHORMION. Inermia. Folia *Clypeariæ.* Pedunculi in axillis v. in panicula solitarii, rarius sub-fasciculati. Legumen moniliforme, rectum v. cochleato-contortum.—Species Polynesicæ.

The species I have here collected together are but little known, and I do not clearly understand the description given of the pod of P. *moniliforme* and *scutiferum.* That of P. *pruinosum* is somewhat similar to that of P. *lobatum,* but smaller. Probably in the three species the exterior margin is as in P. *lobatum,* deeply indented. If it be so also in the two others (where it is unknown), the section *Cathormion* will

differ from *Clypearia* only in the inflorescence, which is that of the small-flowered *Albizzias*.

* *Floribus in capitulo numerosis pedicellatis.*

35. P. *moniliferum*, ramulis foliisque junioribus tomentellis, pinnis unijugis, foliolis 5-7-jugis oblique ovali-oblongis obtusis inæquilateris subincurvis, glandula in medio petiolo, floribus glabriusculis, calyce corolla triplo breviore, ovario sessili puberulo, legumine recto moniliformi.—*Inga monilifera*, DC. Decaisne, Herb. Tim. Descr. p. 131.—Timor, *Herb. Par.* I have only seen it in flower.

36. P. *pruinosum*, ramulis petiolisque minute pruinoso-puberulis, pinnis irregulariter bijugis, foliolis inæqualiter 3-4-jugis plerisque alternis oblongis subrhombeisve, pedunculis hinc inde suprapositis paucis, floribus pubescentibus, calyce corolla triplo breviore, legumine cochleato margine exteriore profunde sinuato.—*Acacia pruinosa* et A. *sapindoides*, A. Cunn. MS.—Folia valde irregularia quoad formam magnitudinem et dispositionem tam pinnarum quam foliolorum. Foliola sæpius remota, majora 2-3-pollicaria, glabra. Flores in capitulo numerosi, parvi, pedicellis fere 2 lin. longis.—An hujus sectionis? an *Clypeariæ* species?—New Holland, Moreton Bay, Liverpool Plains, and Brisbane River, *A. Cunningham.*

** *Floribus in capitulo* 2-3-*nis subsessilibus.*

37. P. *scutiferum*, glabrum, pinnis unijugis, foliolis 2-3-jugis oblongo-ellipticis v. ovali-oblongis acuminatis glaberrimis, glandula parva prope basin petioli, calyce minute dentato corolla subtriplo breviore, ovario subsessili glabro.—*Mimosa scutifera*, Blanco, Fl. Filip. p. 735, excl. var. Casai, etc.—Affine P. *lobato.* Foliola 4-6-pollicaria, supra nitida. Paniculæ rami et pedunculi pauci. Flores interdum solitarii. Corolla late tubuloso-campanulata. Legumen, quod ipse non vidi, teste Blanco magnum est, longissimum, fere ad suturam lobatum in segmenta alternatim ad utrumque latus dejecta.—Philippine Islands, *Cuming*, n. 475. Mountains of Bavang, *Blanco.*

38. P. *pauciflorum* (sp. n.), glabrum, pinnis unijugis, foliolis sub-bijugis ovatis oblongisve obtuse acuminatis glaberrimis, glandula in medio petiolo, calyce corolla quadruplo breviore, ovario stipitato glabro.—P. *scutifero* quodammodo simile, sed foliola vix 2-3-pollicaria et ovarium stipitatum. Corollæ latiuscule campanulatæ, basi attenuatæ, 2 lin. longæ.—Phillippine Islands, *Cuming*, n. 1854.

39. P.? *laxiflorum*, glabrum, pinnis unijugis, foliolis 2-3-jugis ovali-oblongis obtuse acuminatis glabriusculis, glandula in medio petiolo, calyce corolla dimidio breviore.—*Acacia laxiflora*, DC. Prodr. 2, p. 455.—Timor, *Paris Herbarium*. The pod is unknown, but from the general habit of the plant it appears to be allied to the others of this section.

SECT. VI. CAULANTHON. Inermes. Stipulæ obsoletæ v. deciduæ, rarius persistentes, lanceolatæ. Pinnæ 1-rarius 2-jugæ. Foliola uni-pluri-juga, sæpius paucijuga, interdum solitaria. Glandulæ inter pinnas et foliola rarius obsoletæ, petiolares nullæ. Pedunculi monocephali v. monostachyi, breves, in ramulis annotinis fasciculati. Legumen rectum, falcatum v. contortum, plano-compressum, coriaceum, sub-bivalve, marginibus leviter incrassatis, intus tenuiter pulposum. Semina exarillata.—Species omnes Americanæ.

The peculiar inflorescence of this section is not to be met with in any of the allied genera except in some *Ingæ*, which these plants resemble also in the form of the flower, but are readily known, even without the pod, by their leaves, which are doubly, not singly pinnate.

** *Foliolis cujusve pinnæ* 1-3-*nis*.

40. P. *unifoliolatum* (sp. n.), glabrum, pinnis unijugis, foliolis solitariis ovali-ellipticis oblongisve obtusissime acuminatis, pedunculis brevissimis, capitulis globosis 12-15-floris, floribus sessilibus glabris, calyce minuto corolla multoties breviore, ovario sessili glabro.—Species foliis distinctissima. Petioli communes 1 lin. longi, apice petiolos

partiales ferunt duo, 1 lin. longos. Foliola in petiolis partialibus solitaria, 2-3-pollicaria, coriacea. Flores 3 lin. longi. Staminum tubus longe exsertus.—Brazil, *Langsdorff*.

41. P. *ligustrinum*, glabrum, pinnis unijugis, foliolis 2-3 oblongo-lanceolatis acuminatis basi dimidiatis, pedunculis elongato-spiciferis à basi floriferis, calyce corolla glabra infundibuliformi vix triplo breviore, staminum tubo breviter exserto. —*Mimosa ligustrina*, Vahl. Ecl. 3. p. 34. t. 27. non Jacq. *Inga Vahliana*, DC. Prodr. 2, p. 438. *Inga falciformis*, DC. Prodr. 2, p. 438. *Inga longifolia*, Humb. et Bonpl. in Willd. Spec. 4, p. 1010.—Foliola 3-6 poll. longa. Legumen complanatum.—New Granada: Santa Martha, *Rohr.*, *Bertero*. The above-quoted synonyms are in some measure doubtful, but there is every reason to believe that they all refer to one species.

42. P. *divaricatum*, (sp. n.), ramulis petiolisque glabriusculis, pinnis unijugis, foliolis 2-3 oblongo-lanceolatis acuminatis basi dimidiatis glabris, capitulis laxis paucifloris, calyce corolla glabra subinfundibuliformi triplo breviore, staminum tubo breviter exserto, ovario sessili glabro.—Foliola 3-5-pollicaria. Pedunculi graciles semipollicares, breviter racemosi. Capitula parva, subglobosa. Corollæ 2 lin. v. vix longiores. —Brazil, *Langsdorff*.

43. P. *cataractæ*, glabrum, pinnis unijugis, foliolis 3 oblique lanceolato-oblongis acuminatis basi dimidiato-rotundatis membranaceis, pedunculis brevibus, legumine compresso-complanato lineari açuminato.—*Inga cataractæ*, Humb. et Kunth. nov. gen. et sp. 6, p. 297.—On the cataract of Javariveni, near Atures, *Humboldt and Bonpland*. Unknown to me except from Kunth's description, probably very near to, if not the same as the following:

44. P. *glomeratum*, glabrum, pinnis unijugis, foliolis 3 ovato- v. oblongo-lanceolatis acuminatis coriaceis, capitulis multifloris sessilibus v. brevissime pedunculatis, corolla tubulosa glabra calyce brevissimo multoties longiore, staminum tubo subexserto, ovario sessili glabro.—*Inga glomerata*, DC. Prodr. 2, p. 438.—Foliola parum obliqua, penninervia, 3-5-pollicaria.—British Guiana, *Schomburgk*, n. 471 in part and

n. 70 of 1841; French Guiana; Surinam, *Hostmann*, n. 149.

** *Pinnis plerisque v. omnibus 5-pluri-foliolatis.*

45. P. *latifolium*, glabrum, stipulis persistentibus lanceolatis acuminatis, pinnis unijugis, foliolis quinis rarius ternis inferioribus alternis æquilateris, extimis oppositis basi dimidiatis v. ovato-oblongis acuminatis, florum capitulis laxis sessilibus pedunculatisque, corollis tubulosis minute puberulis calyce multoties longioribus, staminum tubo exserto.—*Inga latifolia*, Willd. Spec. 4, p. 1020.—Foliola 3-4 pollicaria, latiora quàm in affinibus.—West Indies: St. Vincent's, *Guilding*.

46. P. *Selloi*, (sp. n.), glabrum, stipulis minutis, pinnis unijugis, foliolis ternis quinisve remotis oblongis v. ovato-lanceolatis acuminatis basi dimidiato-angustatis, pedunculis supra medium laxe spiciferis, calyce parvo truncato corolla glabra elongata multoties breviore, staminum tubo subexserto, ovario sessili glabro.—Folia et habitus fere P. *latifolii*. Stipulæ cito deciduæ. Glandula subobsoletæ. Pedunculi 1-1½-pollicares. Flores 10-20, supra medium pedunculi interrupti. Corolla fere 6 lin. longa, striata.—Brasil, *Sello*.

47. P. *lasiopus* (Benth. in Hook. Journ. 2, p. 141), ramulis petiolisque pubescentibus v. demum glabratis, stipulis minutis, pinnis unijugis, foliolis 2-3-jugis inæqualibus ovali-oblongis obtuse acuminatis extimis basi obliquis glabris v. ad venas rarius puberulis, capitulis laxis breviter pedunculatis sessilibusve, floribus pubescentibus, calyce corolla tubulosa multoties breviore, staminum tubo exserto.—Foliola magnitudine varia, semper tamen minora et angustiora quàm in P. *latifolio*.—Demerara, *Parker*; British Guiana, *Schomburgk*, n. 487, and n. 158 and 188 of 1841; Surinam, *Hostmann*, n. 174, 261 and 1173.

48. P. *cauliflorum*, (Mart. Herb. Fl. Bras. p. 116), ramulis petiolisque pubescentibus, stipulis persistentibus lato-lanceolatis acutis, pinnis unijugis, foliolis 2-4-jugis ovatis obovatisve basi æqualibus v. extimis dimidiato-angustatis subtus pubescentibus, capitulis laxis sessilibus v. breviter pedunculatis, floribus minute puberulis, calyce corolla tubu-

losa multoties breviore, staminum tubo exserto.—*Inga cauliflora*, Willd. Spec. 4, p. 1021.—Foliola pleraque 2-2½ pollicaria. Flores quàm in præcedentibus minores.—Tropical Brazil, *Martius*, *Sello*, *Langsdorff*, &c.

Mimosa glomerata, Vell. Fl. Flum. 11, t. 43, if not the same species as the last, is closely allied to it.

49. P. *glabratum* (Mart. Herb. Fl. Bras. p. 116), glabrum, stipulis parvis, pinnis unijugis, foliolis 2-4-jugis oblique oblongo-lanceolatis v. obovato-oblongis obtusis, capitulis paucifloris laxis breviter pedunculatis, floribus vix puberulis, calyce corolla tubulosa multoties breviore, staminum tubo exserto. Foliola uni- v. vix bi-pollicaria, minus quàm in præcedentibus nigrescunt. Flores minores numerosi.—Tropical Brazil, *Pohl*, *Claussen*, *Martius*, n. 1029; Utinga, in the Province of Bahia, *Blanchet*, n. 2764, the latter a somewhat broader leaved form.

50. P. *ramiflorum* (sp. n.), glabrum v. junius tenuiter puberulum, stipulis obsoletis, pinnis inæqualiter bijugis, foliolis pinnarum superiorum 5-7-jugis oblique oblongo-rhombeis acuminatis coriaceis nitidis, spicis brevibus subsessilibus, floribus puberulis, calyce corolla subtriplo breviore, staminum tubo incluso, ovario sessili glabro.—*Inga ramiflora*, Bongard, MS.—Foliola ultima 3-pollicaria, longe acuminata, inferiora gradatim multo minora. Flores vix 3 lin. longi, staminibus neglectis.—Borba, in Brazil, *Langsdorff*.

SECT. VII. SAMANEA. Arbores inermes. Stipulæ inconspicuæ. Pinnæ et foliola multijuga, rarius paucijuga. Inflorescentia axillaris v. paniculata. Legumen rectiusculum v. arcuatum nec cochleatum, valvulis planis coriaceis non contortis. Semina exarillata.[1]

In foliage and flowers, the species of this section scarcely differ from *Abaremotemon*, especially those of the first group, which have the same inflorescence. The leaflets and pinnæ are usually more numerous and smaller. The pod is very different, coming in some instances near to that of the flat fruited *Ingæ*, from which however they are at once known by the bipinnate foliage.

§ 1. *Axillares.* Pedunculi axillares solitarii v. fasciculati, v. ultimi rarius brevissime racemosi. Capitula majuscula, nunc maxima. Legumen in plerisque (an in omnibus?) dehiscens.

* *Glandulis jugalibus, petiolari nulla.*

51. P. *Saman*, ramulis petiolisque junioribus pubescentibus, pinnis 4-6-jugis, foliolis pinnarum inferiorum 2-3-jugis superiorum 6-8-jugis ovato-oblongis supra glabris subtus pubescentibus, legumine plano utraque sutura canaliculata.—*Inga Saman*, Willd. Spec. 4. p. 1024.—Species mihi ignota, a sequentibus distincta videtur præsertim foliolis superioribus usque ad 3 poll. longis, inferioribus semipollicaribus. Glandulæ inter pinnas urceolatæ, crassæ, inter foliola parvæ. Caraccas, *Jacquin*; Jamaica, *De Candolle.*

52. P. *cinereum*, ramulis petiolisque cinereo-pubescentibus, pinnis bijugis, foliolis 5-7-jugis oblique ovatis supra glabris subtus pubescentibus reticulatis, pedunculis axillaribus, capitulis globosis, floribus tomentosis, calyce corolla duplo longiore, ovario subsessili glabro.—*Inga cinerea*, Humb. et Kunth, Nov. Gèn. 6, p. 304.—Arbor maxima. Foliola summa sesquipollicaria, infima semipollicaria. Glandulæ inter pinnas cupuliformes. Corolla 4 lin. longa, rubra. Stamina circa 20. Legumen ignotum. Species à me non visa, P. *Saman* affinis videtur.—Caraccas, *Humboldt and Bonpland.*

53. P. *salutare*, ramulis petiolisque tomentosis, pinnis 4-jugis, foliolis 6-9-jugis subrhomboideo-ovatis membranaceis reticulatis supra glabris subtus molliter pubescentibus, pedunculis axillaribus, capitulis globosis, floribus tomentosis, corolla calyce duplo longiore, ovario subsessili glabro, legumine subtoruloso.—*Inga salutaris*, Humb. et Kunth, Nov. Gen. 6. p, 304.—Differt ex Kunth à P. *cinereo*, cui simillimum, pinnarum numero, foliolorum forma, floribus majoribus (corolla 5-lin. longa), et staminibus circa 40. Legumen 6-8-pollicare, bivalve, valvis melliferis, melli acerbo.—Between Turbaco and Carthagena, *Humboldt and Bonpland.*

54. P. *ferrugineum* (sp. n.), ramulis petiolisque ferrugineo-

tomentosis, pinnis 2-3-jugis, foliolis 6 jugis oblique rhombeo-obovatis oblongisve coriaceis reticulatis glabris v. subtus puberulis, pedunculis axillaribus rigidis, capitulis globosis ovoideisve, floribus ferrugineo-tomentosis, corolla calyce vix dimidio longiore, ovario subsessili glabro.—An P. *salutaris* var. Foliola rigida, 6-12 lin. longa. Glandulæ inter pinnas maximæ scutellæformes, inter foliola paucæ parvæ. Corollæ 5-5½ lin. longæ.—British Guiana, *Schomburgk*, n. 663 of 1843.

The four last species are probably very nearly allied to each other, and perhaps all varieties of one species. They are all very tall trees, of which only small and imperfect specimens reach us, Kunth speaks of those which he described as mere fragments.

55. P. *rhombeum* (sp. n.), ramulis petiolisque junioribus ferrugineo-pubescentibus, pinnis 6-8-jugis, foliolis 8-12-jugis oblique rhombeis subcoriaceis glabris v. subtus ad venas puberulis, pedunculis axillaribus, capitulis globosis, floribus ferrugineo-puberulis, calyce corolla triplo breviore, ovario sessili glabro, legumine plano falcato glabro marginibus incrassatis.—Foliola fere P. *trapezifolii*, ultima 8-9 lin. longa, inferiora minora, costa media diagonali. Glandulæ parum conspicuæ. Flores in capitulo numerosi, sessiles. Calyx 1 lin., corolla 3 lin. longa. Legumen adest 5-pollicare, 8-9 lin. latum.—Brazil, *Sello*.

56. P. *micradenium* (sp. n.), ramulis petiolisque ferrugineo-tomentosis, pinnis 5-8-jugis, foliolis 8-12-jugis oblique rhombeis supra glabris subtus adpresse puberulis membranaceis, pedunculis axillaribus, floribus ferrugineo-puberulis, calyce corolla subtriplo breviore, ovario sessili pubescente.—P. *rhombeo* simile. Foliola paullo minora, tenuiora, pilis subtus adpressis sparsis. Glandulæ minutæ. Habitu etiam *Albizziæ Julibrissin* accedit sed primo intuitu costa foliolorum diagonali dignoscitur. Legumen ignotum.—Dominica, *Imray*.

57. P. *auriculatum* (sp. n.), ramulis petiolisque ferrugineo-tomentellis, pinnis 5-7-jugis, foliolis 6-10-jugis oblique rhombeis ad angulum interiorem sæpius obtuse auriculatis utrinque glabris supra nitidis subtus pallidis ultimis falcato-oblongis, pedunculis axillaribus, floribus ferrugineo-tomentellis,

calyce corolla vix ter breviore, ovario sessili glabro.—Hæc etiam species P. *rhombeo* affinis est sed foliola et flores multo minora. Ramuli tenues. Foliola 3-5 lin. longa, venulis præter costam diagonalem vix conspicuis. Glandulæ paucæ, parvæ. Pedunculi 8-10 lin. longi. Corolla 2 lin. longa. Stamina circa 15. Legumen ignotum.—Borba, on the Rio Negro, in Brazil, *Langsdorff*.

58. P. *adianthifolium*, ramulis petiolisque glabris subglutinosis v. vix puberulis, pinnis 5-10-jugis v. in ramulis superioribus paucijugis, foliolis 10-25-jugis oblongis linearibusve valde obliquis hinc basi dilatatis subcoriaceis nitidis glabris, pedunculis axillaribus, floribus maximis ferrigineo-tomentellis, calyce corolla subtriplo breviore, legumine falcato vix tomentello.—*Inga adianthifolia*, Kunth, Mim. p. 66, t. 21. *Inga discolor*, Humb. et Bonpl. in Willd. Spec. 4, p. 1023.—Arbor parva, glabritie et floribus magnis ab affinibus distinctissima. Folia variabilia quoad numerus pinnarum et forma foliolorum, quæ sæpius 8-10 lin. longa, 2-4 lin. lata. In omnibus corollas vidi pollicares uti à Willdenowio descripta, nec sesqui-pollicares ut dixit Kunthius. Flores albi, staminum tubo exserto. Legumen semipedale, pollicem latum, plus minus falcatum, planum, coriaceum, marginibus incrassatis, intus tenuiter pulposum.—On the Atabapo River, *Humboldt and Bonpland*; on the Essequibo, *Parker*, *Schomburgk*, n. 387 of 1843; Surinam, *Hostmann*, n. 1277; on the Amazon River, *Pœppig*.

59. P. *Martianum* (sp. n.), ramulis petiolisque ferrugineo-villosis, pinnis 7-9-jugis, foliolis 15-20-jugis oblique oblongo-linearibus falcatis supra nitidis subtus pallidis glabris v. ciliato-puberulis, pedunculis axillaribus, legumine elongato arcuato plano ferrugineo-tomentoso marginibus leviter incrassatis.—Foliis P. *Langsdorffii* et P. *incuriali* simile. Legumen semipedale, pollicem latum, obtusum cum mucrone obliquo. Flores non vidi.—Brazil, *Martius*, *Herb. Fl. Bras.* n. 1101.

60. P. *incuriale*, ramulis petiolisque ferrugineo-villosis, pinnis 6-10-jugis, foliolis 15-25-jugis oblique oblongo-linearibus falcatis acutiusculis supra nitidis subtus (in sicco) rufe-

scentibus margine ciliatis cæterum glabris, pedunculis axillaribus, capitulis densis, floribus ferrugineo-puberulis, calyce corolla subduplo breviore, legumine plano recto tenuissime tomentoso marginibus leviter incrassatis.—*Mimosa incurialis*, Vell. Fl. Flum. 11, t. 24. *Enterolobium*? *Tamboril*, Mart. Herb. Fl. Bras. p. 117, ex Syn. Vell.—Foliola pleraque 3 lin. longa, vix lineam lata. Glandulæ substipitatæ, scutellæformes. Pedunculi sesqui-pollicares. Corolla infundibuliformi-tubulosa 3 lin. longa. Stamina numerosa. Ovarium sessile, glabrum. Legumen 4-5 poll. longum, 8-9 lin. latum. —Brazil (Minas Geraes?), *Pohl*, *Sello*.

** *Glandula petiolari præter jugales.*

61. P.? *Schomburgkii*, (sp. n.), ramulis petiolisque ferrugineo-tomentosis, pinnis 18-20-jugis, foliolis 50-60-jugis parvis lineari-falcatis supra nitidis subtus ferrugineo-puberulis, glandula petiolari oblonga, floribus in capitulo sessilibus, calyce corolla dimidio breviori, ovario sessili villoso.—Foliola vix lineâ longiora. Pedunculi fasciculati, vix pollicares. Calyces turbinato-tubulosi 1 lin. longi. Corolla vix 2 lin. longa. —Pedrero, on the Rio Negro, *Schomburgk*, n. 874.

62. P. *pedicellare*, ramulis petiolisque ferrugineo-tomentellis, pinnis 6-10 jugis, foliolis 20-30-jugis oblongo-linearibus obtusis parum obliquis supra glabriusculis subtus pubescentibus, glandulis petiolaribus pulvinatis sæpe geminis, floribus in capitulo pedicellatis.—*Inga pedicellaris*, DC. Prodr. 2, p. 441.—Folia fere P. *fragrantis*. Foliola 3-4 lin. longa. Pedunculi 2-3-pollicares. Pedicelli exteriores 2 lin. longi, interiores brevissimi. Corolla fere 4 lin. longa. "Legumen oblongum, rectum, 2½-poll. longum, pollicem latum."—Cayenne, *De Candolle*; Brazil, *Langsdorff*.

§. 2. *Paniculatæ*. Pedunculi fasciculati in paniculas terminales v. axillares polycephalas dispositi. Flores in capitulis parvis sessiles. Legumen sæpe indehiscens. Glandula petiolaris oblonga v. orbiculata rarissime obsoleta, jugales parvæ.

63. P. *polycephalum*, ramulis petiolisque ferrugineo-to-

mentellis, pinnis 8-10-jugis, foliolis 15-25-jugis falcato-oblongis obliquis supra nitidis subtus ferrugineis glabris puberulisve, floribus ferrugineo-puberulis, corolla calyce vix duplo longiore, ovario pubescente, legumine falcato plano ferrugineo-tomentoso.—*Mimosa terminalis*, Vell. Fl. Flum. 11, t. 30?—Petioli communes 3-4-pollicares, partiales 1½-2-pollicares. Foliola 2-3 lin. longa, acuta v. sæpius obtusa. Corollæ vix 2 lin. longæ.—Tropical Brazil, *Sello*, *Pohl*; near Rio Janeiro, *Miers*; near Ilheos, *Blanchet*, n. 1848.

64. P. *fragrans*, glabrum v. panicula minute puberula, pinnis 8-10-jugis, foliolis 30-40-jugis oblongo-linearibus falcatis obtusiusculis supra nitidis subtus pallidis, panicula foliosa, floribus glabriusculis, corolla calyce plus triplo longiore, ovario sessili glabro, legumine recto tenuissime puberulo flavicante, valvulis inter semina coalitis.—*Inga fragrans*, Macfad. Fl. Jam. 1. p. 309.—Foliola 3-4 lin. longa. Corolla tubulosa, vix 2 lin. longa. Legumen breviter stipitatum tripollicare, vix 6 lin. latum.—Jamaica, *Macfadgen*.

65. P. *Berterianum*, glabrum v. panicula minute puberula, pinnis 8-12-jugis, foliolis 30-50-jugis anguste linearibus falcatis acutiusculis supra nitidis subtus pallidis, panicula foliosa, floribus glabriusculis, corolla calyce vix triplo longiore, ovario sessili puberulo, legumine recto tenuissime puberulo flavicante valvulis inter semina coalitis.—*Acacia Berteriana*, DC. Prodr. 2, p. 470. *Acacia Balbisii*, Spreng. Syst. 3, p. 140.—P. *fragranti* valde affine, et forte ejus varietas foliolis minoribus multo angustioribus.—Haiti, *Ehrenberg*.

66. P. *multiflorum*, glabrum v. ramulis petiolisque puberulis, pinnis 1-4-jugis, foliolis 6-10-jugis late v. anguste oblongo-falcatis valde obliquis basi bi-pluri-nerviis glabris ciliatisve, pedunculis in racemos axillares v. terminales paniculatos dispositis, capitulis minimis, corolla calyce 4-5-plo longiore, ovario glabro, legumine recto plano.—*Acacia multiflora*, Humb. et Kunth, Nov. Gen. et Sp. 6, p. 277. *Acacia subdimidiata*, Splitg. Pl. Nov. Surin. p. 18.—Species forma foliolorum et inflorescentia distinctissima. Variat foliolorum consistentia et magnitudine a semipollice fere ad pollicem,

pube sparsa v. nulla. Racemi subsemipedales. Pedunculi sæpius fasciculati breves. Capitula vix pisi magnitudinis. Corolla vix 1½ lin. longa, profunde 5-fida, glabra. Stamina circa 20, semipollicaria. Legumen nonnisi junius vidi.—A tree occupying an extensive range in tropical America. I have seen specimens from Mexico, *Berlandier*; Guayaquil, *Hinds*; Guiana, *Schomburgk*, n. 530, 830 and n. 490 of 1843; Borba on the Rio Negro, *Langsdorff*; Amazon River, *Pœppig*; Province of Piauhy, in Brazil, *Gardner*, n. 2557; Utinga in the Province of Bahia, *Blanchet*, n. 2756; South Brazil, *Tweedie*. *Humboldt and Bonpland* gathered it in New Grenada.

§ 3. *Corymbosæ*. Pedunculi ad apices ramulorum corymbosi v. infimi axillares. Legumen indehiscens? Glandulæ omnes jugales.

67. P. *corymbosum*, (sp. n.), ramulis petiolisque ferrugineo-tomentellis v. demum glabratis, pinnis 2-4-jugis, foliolis 8-12 jugis oblongis valde obliquis subrhombeisve venosis supra nitidis subtus pallidis glabris v. vix puberulis, floribus in capitulo longe pedicellatis, legumine recto transverse rimoso.—Ramuli dense foliati. Foliola 6-9 lin. longa, 2-4 lin. lata. Corymbus foliis brevior. Flores in capitulo numerosi. Pedicelli graciles, 1-3 lin. longi. Legumen, quod nonnisi imperfectum vidi, in articulos recedere videtur.—British Guiana, *Schomburgk*, n. 114 of 1841; Cayenne, *Martin*; Surinam, *Hostmann*, n 214, 262, and 1190; Borba on the Rio Negro, *Langsdorff*.

In some specimens, the flowers are transformed into foliaceous bracts, disposed in doubly or trebly branched umbells.

68. P.? *comosum*, pinnis trijugis, foliolis 9-10-jugis ovalibus basi retusis, floribus paniculato-corymbosis, leguminibus acinaciformibus.—*Inga comosa*, Willd. Spec. 4, p. 1026.—Unknown to me; perhaps rather an *Enterolobium*.—Mountains of North Jamaica, *Swartz*.

SECT. VIII. CHLOROLEUCON. Spinæ hinc inde axillares, rectæ, solitariæ v. geminæ. Stipulæ in gemmis fusco-membranaceæ, in ramulis deciduæ v. obsoletæ. Pinnæ et foliola plurijuga v. sæpius multijuga. Glandula prope basin petioli, et jugales inter pinnas v. foliola suprema. Pedunculi axillares, solitarii v. gemini. Capitula subglobosa. Flores sessiles, tubulosi, glaberrimi, v. vix ciliis paucis ad orem calycis. Ovarium sessile, glabrum. Legumen crasso-compressum, falcatum, valvulis coriaceo-carnosis, intus transverse septatum. Semina exarillata. Species Americanæ.

Even without the spines, the small light-green folioles, and the smooth, almost shining slender flowers, give a peculiar habit to the species of this section, of which the essential character appears to reside in the thick fleshy pod. The spines, when present, appear to be formed of abortive peduncles.

69. P. *tortum* (Mart. Herb. Fl. Bras. p. 114), glaberrimum, pinnis 3-4-jugis, foliolis 5-9-jugis oblique obovato-oblongis plurinerviis, calyce truncato ore nudo corolla ter breviore. —Frutex biorgyalis, ramulis flexuosis. Foliola 4-6 lin. longa. Corollæ 3 lin. longæ, graciles, in capitulo numerosæ.—Dry hot situations in the province of Bahia, *Martius, Sello.*

70. P. *Vincentis* (sp. n.), ramulis glabriusculis, petiolis puberulis, pinnis 3-4-jugis, foliolis 5-9-jugis oblique oblongis plurinerviis supra glabris subtus piloso-pubescentibus, calyce 4-5-dentato ore nudo corolla dimidio breviore.—P. *torto* valde affine, et forte varietas. Foliola paullo minora, subtus constanter villosula. Flores paullo minores, calycibus proportione longioribus. Isle of St. Vincent's, *Guilding.*

71. P. *tenuiflorum* (sp. n.), ramulis petiolisque velutino-pubescentibus, pinnis 3-4-jugis, foliolis 5-9-jugis oblique oblongis plurinerviis utrinque piloso-pubescentibus, calyce minute dentato apice pilosulo corolla glabra triplo breviore.—Hæc etiam species vix nisi villositate a P. *torto* differt. Foliola parum angustiora. Flores tenuiores.—Brazil, *Pohl;* near Jaquara, *Langsdorff.*

72. P. *Mathewsi* (sp. n.), ramulis petiolisque pubescentibus, pinnis 5-8-jugis, foliolis 15-20-jugis oblique oblongis vix trinerviis supra glabris subtus pubescentibus, calyce trun-

cato corolla triplo breviore. Affine P. *dumoso*.—Glandulæ oblongæ erectæ. Foliola 2-3 lin. longa. Pedunculi semipollicares. Flores P. *torti*.—Mozabamba in Peru, *Mathews*.

73. P. *dumosum* (sp. n.), ramulis petiolis foliisque junioribus ferrugineo-tomentosis, pinnis 3-4-jugis, foliolis 9-16-jugis oblique oblongis subtrinerviis minute et sparse pubescentibus, calyce truncato ore pilosulo corolla triplo breviore.—Frutex 10-pedalis, ramulis ut in P. *torto* flexuosis verruculosis. Tomentum in partibus junioribus aureo-ferrugineum. Stipulæ lanceolatæ, cito deciduæ, basi persistente tuberculiformi. Foliola 2-3 lin. longa. Glandulæ parvæ, scutellæformes. Pedunculi vix semipollicares. Flores P. *torti* sed minores.—Dry barren places, near Barra do Jardim, in Piauhy, Gardner, n. 1746.

74. P. *parvifolium*, ramulis novellis petiolisque pubescentibus, pinnis 5-9-jugis, foliolis 10-25-jugis oblongis linearibusve sub-binerviis glabris ciliolatis, calyce dentato corolla duplo breviore.—*Acacia parvifolia*, Willd. Spec. 4, p. 1086, DC. Prodr. 2, p. 462. *Inga Marthæ*, DC. Prodr. 2, p. 441.—Foliola subimbricata, vix 2 lin. longa.—Sandy situations, near the sea, in Jamaica, and other West Indian islands.

75. P. *foliolosum* (sp. n.), ramulis glabris v. novellis petiolisque pubescentibus, pinnis 7-8-jugis, foliolis multijugis minimis imbricatis oblique oblongis 2-3-nerviis pilosulis, calyce truncato corolla ter breviore.—Foliola quàm in P. *parvifolio* minora, numerosiora. Flores minores.—Banks of the Capibamba in Pernambuco, *Gardner*; Villa do Barra, *Blanchet*, n. 3136.

XXVI. ENTEROLOBIUM, *Martius*.

Flos *Pithecolobii* sectionis *Samaneæ*. Legumen breve, incurvato-reniforme, crasso-coriaceum, compressum, indehiscens, intus carnosum, endocarpio pergameno, transverse septatum. Seminum funiculus filiformis. Arbores Americanæ habitu *Pithecolobiorum* sectionis *Samaneæ*. Foliola demum sæpius coriacea, insigniter venosa. Pedunculi solitarii v. subfasciculati, axillares v. superiores in racemum brevem dispositi. Capitula exacte globosa. Calyx laxior et corollæ limbus proportione tubi major quàm in *Pithecolobiis* plerisque. Ovarium sessile.

Had this genus not already been established by Martius, I should have been much disposed to consider it but as a section of *Pithecolobium,* from which it only differs in the pod.

1. E. *Timboüva* (Mart. Herb. Fl. Bras. p. 128), glabrum v. partibus novellis pubescentibus glaucescens, pinnis 2-5-jugis, foliolis 10-20-jugis falcato-oblongis dimidiatis mucronato-acutis basi valde obliquis 2-3-nerviis venosis, glandula petiolari pulvinata v. obscura, floribus apice puberulis, calyce membranaceo 5-dentato corolla duplo breviore.—*Mimosa contortisiliqua,* Vell. Fl. Flum. 11, t. 25, *Enterolobium glaucescens,* Mart. Herb. Fl. Bras. p. 117.—Formas vidi plurimas satis diversas sed characteribus certis distinguere nequeo. Foliola nunc pollicaria demum coriacea supra siccitate nigricantia, venis conspicuis paginaque inferiore glauco-pallidis, nunc dimidio minora utrinque glauca, minus venosa. Costa media lateri superiori approximata.—Brazil; common near Crato in Cearà, *Gardner,* n. 1579; Utinga, in Bahia, *Blanchet,* n. 2762; Cuyaba, *Martius, Langsdorff;* on the Rio San Francisco, *Claussen;* on the Uruguay, *Tweedie;* also in Jamaica, *Herb. Banks.*

2. E.? *Blancheti* (sp. n.), ramulis petiolisque vix minute puberulis, pinnis 2-4-jugis, foliolis 8-12-jugis oblique subrhombeo-oblongis obtusis mucronatis inæquilateris glabris, glandula petiolari parva v. nulla jugalibus nullis, capitulis paucifloris, floribus pedicellatis, calyce glabro truncato corolla canotomentella dimidio breviore.—Habitu et foliis *Pithecolobio corymboso* accedit, sed flores potius *Enterolobii.* Fructus ignotus.—Serra Acurua, in Bahia, *Blanchet,* n. 2776.

3. E.? *ellipticum* (sp. n.), glabrum, pinnis 1-2-rarius 3-jugis, foliolis 4-6-jugis oblongo-v. ovali-ellipticis obtusis subæquilateris basi obliquis coriaceis venosis, glandula petiolari immersa jugalibus parvis, capitulis multifloris, floribus subsessilibus vix minute puberulis, calyce breviter dentato

corolla dimidio breviore.—Folia rigida. Pinnæ distantes. Foliola 1-1½-pollicaria. Flores fere E. *Timbouræ.*—Pernambuco, *Gardner, n.* 2834; Rio San Francisco, *Claussen;* also in *Pohl, Sello,* and *Langsdorff's* collections.

4. E. *Mongollo* (Mart. Herb. Fl. Bras. p. 117).—*Mimosa Mongollo,* Vell. Fl. Flum. 2, t. 26.—Referred here on the authority of Martius. Velloso's figure has some resemblance to my *Pithecolobium foliolosum.*

XXVII. SERIANTHES.

Calyx ample campanulatus 5-fidus. Corolla 5-partita laciniis basi tubo stamineo adnatis. Stamina monadèlpha numerosissima. Legumen oblongum v. ovatum compressum lignosum indehiscens.—Species unica Asiatica et Polynesica.

1. S. *grandiflora.*—*Inga grandiflora,* Wall. Cat. Herb. Ind. n. 5285. *Acacia myriadenia,* Guillem. Zeph. Tait. in Ann. Sc. Nat. Par. Ser. 2, v. 7, p. 359.—Arbor inermis, ramulis petiolis pedunculisque minute ferrugineo-tomentellis. Stipulæ obsoletæ. Folia bipinnata ampla petiolo communi semipedali ad pedalem, pinnis 6-8 jugis 3-6 poll. longis, foliolis 15-20-jugis plerisque alternis oblique trapezoideo-oblongis obtusis retusisve subfalcatis basi valde inæquilateris 5-9 lin. longis supra glabris subtus pallidis glabris v. pilosiusculis, basi 1-3-nerviis reticulato-venosis. Glandula elevata infra medium petioli, et jugales inter pinnas plerasque et foliola suprema. Pedunculi axillares subramosi 3-7-flori foliis multo breviores. Bracteæ in speciminibus desunt. Flores inter *Mimoseas* maximi breviter pedicellati. Calyces 6-8 lin. longi, late campanulati crassiusculi extus uti pedicelli dense tomentosi, intus glabri, lobis ovatis acutis. Petala longe lanceolata acuta fere sesquipollicaria, basi inter se et cum staminum tubo connata dein libera, apice patentia, acuta, crassiuscula, extus dense sericeo-tomentosa, intus glabra. Staminum tubus calyce brevior, filamenta numerosissima (ultra 500) corolla duplo longiora. Antheræ minutissimæ. Ovarium sessile glabrum. Stylus filiformis staminibus

longior. Legumen 4-6 poll. longum 2-2½ poll. latum, sæpe sub-bullatum, fibroso-lignosum, suturis leviter incrassatis, valvulis inter semina arcte connatis. Semina transversa oblonga.—Singapore, *Wallich;* Otaheite, *Bertero, Hinds;* Philippine Islands, *Cuming.*

This genus concludes the bipinnate *Mimoseæ.* There remain only the two simply pinnate genera, *Inga* and *Affonsea.* There are, it is true, several published species which I have not taken up, but which are unknown to me and too imperfectly described to enable me to guess at the genera to which they should be referred. These neglected species are, however, not so numerous as stated by Walpers, for many of those enumerated by him (Repert. 1, p. 922), as "species à Benthamio omnino neglectæ," will be found to have been quoted even in his copy of my Memoir either as substantive species or synonyms.

(*To be continued*).

Some account of EXOTHEA OBLONGIFOLIA, *of Dr. Macfadyen,* (*Hypelate oblongifolia,* HOOK.), *by* W. J. H.

(TAB. VII.)

Among a collection of plants made in the West Indies by Mr. Lane, Surgeon, R.N., and communicated to me by W. Brown, Esq. of Edinburgh, is one from Jamaica, which I was not long in determining to be the same with the *Exothea oblongifolia,* Macfadyen, in his Flora of Jamaica, first detected by that gentleman on the Port Royal Mountains. Its general resemblance to *Amyris* induced Dr. Macfadyen to refer the plant to *Terebinthaceæ,* and not finding any genus to agree with it of that family, he naturally considered it a new one, and constituted of it the genus *Exothea* (from εξωθεω, to *expel,* being separated, as it were, from the other *Terebinthaceæ,* or *Amyrideæ,* by the absence of the pellucid glands). I think, however, on a careful investigation, it will be found to belong to *Sapindaceæ* rather than to *Terebinthaceæ*, and that it will quite accord with that group of the genus *Melicocca*, Juss. and De Candolle, to which the name of *Sphærococca* has been given, but which has been, by Cambassèdes, and as it would appear correctly, united with *Hypelate*, P. Browne. Indeed, it bears the closest affinity to *Melicocca* (Hypelate) *paniculata* of Juss. in Mém. du Mus. d'Hist. Nat. 3, p. 187, tab. 5; differing in little more, as appears from my solitary specimen and from description, than the shape of the leaflets,—in *paniculata* being acute at the apex, and very obtuse at the base, while the reverse is the case with our *oblongifolia*,—and in the respective number of stamens.

I shall give a specific character to this plant, and take the description from Dr. Macfadyen, who had the opportunity of seeing more perfect specimens, for the fruit is unknown to me.

HYPELATE PANICULATA.

Foliis bijugis magnis, foliolis oppositis brevissime petiolulatis basi acutis apice obtusissimis sæpe emarginatis, paniculis terminalibus axillaribusque, floribus pubescentibus 8-andris. (TAB. VII, *under* Exothea).

Exothea oblongifolia, *Macfad. Fl. of Jamaica, p.* 232.

HAB. Jamaica; Port-Royal Mountains; road to Friendship House, St. David's, *Dr. Macfadyen*; Northern side of the island, *Mr. Lane.*

DESCRIPTION. "A tree about 15 feet in height. Branches erect, terete, glabrous, rimoso-punctulated. Leaves alternate, equally pinnated. Leaflets, 2- rarely 3-paired, subsessile 2-3 (3-5) inches long and 1(-1½) broad, oblong, obtuse or subemarginate at the apex, entire, obscurely veined, shining above, glabrous, except the midrib which is minutely puberulous beneath, thin, membranaceous, impunctate. Petiole subtriquetrous, striated, glabrous, 2 inches in length. Stipules none. Panicle terminal (and axillary), sessile (or pedunculate), composed of many branches. Branches subdivided, compressed, angulose, aureo-pubescent, as also the pedicels which are very short. Flowers numerous, white, fragrant, resembling in appearance as well as in smell, those of the Hawthorn of Europe. Bracteas at the subdivisions of the panicle, minute, ovate, acute. Æstivation imbricated. Calyx 5-partite, externally puberulous; divisions rotundato-ovate. Petals 5, roundish, shortly clawed, alternating with, and somewhat smaller than, the divisions of the calyx. Stamens 7, more usually 8, irregularly inserted between the lobes of an annular, fleshy, red, puberulous disk. Filaments somewhat longer than the calyx. Anthers ovate, 2-celled. Ovary conical, villous, seated on the disk. Style short. Stigma obtuse. Drupe the size of a small cherry, with the rind glandulose, of a deep purple-colour, 1-pyrene. Nut large, chartaceous, 1-seeded. Radicle superior, curved, the size of that of the common pea. Cotyledons fleshy.—This is a handsome tree. Only some of the trees bear fruit. The flowers would therefore appear to be polygamous. The fertile ones, however, are furnished with stamens and pistil; in the barren, the latter must be imperfect."

In *Melicocca* the flowers are racemose, with the racemes spiciform, and the seed is erect with a fleshy arillus. In *Hypelate*, as defined by Cambassèdes, the flowers are glomerate or paniculate, the seed pendent, destitute of arillus.

Tab. VII. Hypelate (Exothea, *Macf.*) oblongifolia. Fig. 1, flower-bud; *f.* 2, front, and *f.* 3, back view of a flower; *f.* 4, petal; *f.* 5, stamen; *f.* 6, pistil; *magnified.*

Some account of a new Elæodendron *from New Zealand, by* J. D. Hooker, M.D., R.N. F.L.S.

(Tab. VIII).

There is a low, straggling, rigid shrub, with generally suborbicular leaves, growing in the northern island of New Zealand, which has struck the attention of botanists, but which, for want of flower and fruit, myself and others were long quite unable to determine. At length, among some plants sent to my father by Mr. Colenso, and also by Mr. Pascoe, we detected excessively minute, solitary, axillary flowers, scarcely so big as a small pin's head, and upon another specimen some fruit. A careful examination of these has led me to refer the plant to *Celastrineæ* and to the genus *Elæodendron.* It is no less remarkable for the small size of the flowers than for the variable form of its leaves; so variable, that did we not occasionally see the several kinds upon one and the same branch, it would be difficult to believe they could belong to the same species.

ELÆODENDRON MICRANTHUM.

Humile, ramis rigidis tortuosis, foliis brevi-petiolatis suborbicularibus sinuato-crenatis nunc obovatis oblongisve pinnatifidis vel etiam linearibus bipinnatifidis, floribus minutissimis solitariis axillaribus brevi-pedunculatis, pedunculis folio multo brevioribus, floribus polygamis 5-fidis, drupis 3-spermis. (TAB. VIII).

HAB. Mountains near the Waikare Lake, Northern Island, *Mr. Colenso.* Gulf of Shouraki, *Mr. Pascoe.* Interior of the Northern Island, *Mr. Bidwill.*

DESCRIPTION. Frutex humilis, ramis rigidis tortuosis, attenuatis, cortice cinereo vel cinereo-fusco tectis, glabris, junioribus subpubescentibus. Folia plerumque semi-unciam longa, alterna, rotundata, fere orbicularia, subcoriacea, glabra, sinuato-crenata, reticulata, basi sensim in petiolum perbrevem gracilem attenuata; nunc majora et obovata vel oblonga et pinnatifida, segmentis plurimis brevibus obtusis sæpe bifidis; nunc magis elongatis linearibus pinnatifidis et non raro bipinnatifidis. Flores minutissimi, axillares, solitarii, pedunculati, monoici v. dioici. Pedunculus gracilis, petiolo vix duplo longior folio 4-plo brevior, plerumque decurvus. Calyx 4-fidus, patens, tubo lato planiusculo, lobis rotundatis, sub lente ciliatis. Petala 5, lobis calycinis alterna, iis triplo longiora, patentia, subrotunda, subundulata, sessilia. MASC. Stamina 5, ad oram tubi lati inserta, petalis alternantia. Filamenta subnulla. Antheræ magnæ, rotundato-cordatæ, apiculatæ, marginem versus longitudinaliter dehiscentes. Ovarium nullum. Rudimentum brevissimum styli 3 in fundo calycis. Fœm. ignotus. Drupa semine *Sinapis albæ* vix major, globosa, calyce persistente suffulta, apice 3-tuberculata, subcarnosa, 3-sperma. Semina ovata, subtriangulari-compressa, dorso convexa. Testa membranacea, nigro-punctulata. Albumen carnoso-farinaceum. Embryo erectum. Radicula infera.

In the above description, as well as the figures, some allowance must be made for the extreme minuteness of the flowers and fruit, and for the few individuals at my disposal for dissection. There was an appearance in the seeds of the hilum being at the upper extremity, as if the seeds were suspended; but such is not the case in the fruits of Celastrineæ. I trust at some future time to obtain more copious specimens, and to determine more exactly the structure of the fruit and seeds, and to be able then to give an account of the female flowers, which at present are unknown to me.

Tab. VIII. Fig. 1, upper, and *f.* 2, under side of a flower; *f.* 3, petal; *f.* 4, superior, and *f.* 5, inferior side of a stamen; *f.* 6, fruit (*nat. size*); *f.* 7, the same, *magnified*; *f.* 8, the same cut through transversely, showing the seeds; *f.* 9, 10, seeds; *f.* 11, seed, with the testa removed; *f.* 12, seed, laid open; *f.* 13, leaf; all more or less *magnified.*

Notes of a Botanical Excursion to the Mountains of South Carolina; with some remarks on the Botany of the higher Alleghany Mountains; in a letter to Sir W. J. Hooker, by Asa Gray, M.D.

(*Continued from p.* 225 *of vol.* II.)

Our next day's journey was from Cranberry Forge to Crab orchard on Doe River, in Tennessee, and up Little Doe

River to "Squire Hampton's," where we took a guide and ascended the *Roan Mountain.* While tracing up the Little Doe River, about three miles from its junction with the larger stream so called, at one of the numerous places where the road crosses this rivulet, we again met with *Carex Fraseriana.* This plant did not seem so abundant here in Tennessee, as on the *Grandfather;* but is doubtless plentiful on the mountain side just above. We climbed the north flank of the *Roan,* through the heavily timbered woods and rank herbage with which it is covered; but found nothing new to us, except *Streptopus lanuginosus* in fruit, and among the groves of *Rhododendron maximum* towards the top we also collected *Diphyscium foliosum,* a moss which we had not before seen in a living state. In more open moist places near the summit, we found the *Hedyotis (Houstonia) serpyllifolia,* still beautifully in bloom, and the *Geum geniculatum,* which we have already noticed. It was just sunset when we reached the bald and grassy summit of this noble mountain, and after enjoying for a moment the magnificent view it affords, had barely time to prepare our encampment between two dense clumps of *Rhododendron Catawbiense,* to collect fuel, and make ready our supper. The night was so fine, that our slight shelter of *Balsam* boughs proved amply sufficient; the thermometer, at this elevation of about 6,000 feet above the level of the sea, being 64° Fahr. at midnight, and 60° at sunrise. The temperature of a spring, immediately under the brow of the mountain below our encampment, we found to be 47° Fahr. The *Roan* Mountain is well characterized by *Prof. Mitchell,* as the easiest of access, and the most beautiful of all the high mountains of that region. "With the exception of a body of (granitic) rocks, looking like the ruins of an old castle, near its south-western extremity, the top may be described as a vast meadow, (about nine miles in length, with some interruptions, and with a maximum elevation of 6038 feet) without a tree to obstruct the prospect; where a person may gallop his horse for a mile or two, with Carolina at his feet on one side, and Tennessee on the other, and a green ocean of mountains, raised into tremendous billows, immediately around him. It is the pasture ground for the young horses of the whole country, during the summer. We found the *Strawberry* here in the greatest abundance, and of the finest quality, in regard to both size and flavour, on the 30th of July."*

At sunrise we had fine weather, and a most extensive view of the surrounding country; in one direction we could count from eight to twelve successive ranges of mountains, and nearly all the higher peaks of this whole region were distinctly visible. Soon, however, a dense fog enveloped us, and continued for several hours, during which we traversed the southwestern summit, and made a list of the plants we saw. The herbaceous productions of this bald and rounded summit are chiefly *Aira flexuosa, Juncus tenuis, Carex intumescens*, and *festucacea, æstivalis* (of Mr. Curtis,) and a narrow-leaved variety of *C. Pennsylvanica*, the latter constituting the greater part of the grassy herbage; *Luzula campestris, Lilium Philadelphicum* and *Canadense*, which here only attain the height of 4 to 8 inches, *Sisyrinchium anceps, Smilacina bifolia, Habenaria (Platanthera) peramæna, Veratrum viride, Helonias (Chamælirium) dioica, Osmunda Claytoniana, Linn.* (O. interrupta *Michx.*,) *Athyrium asplenioides, Pedicularis Canadensis*, the latter mostly with purplish-brown flowers, now just expanded, *Trautvetteria palmata, Ranunculus repens, Thalictrum dioicum*, in flower; *Geum radiatum* in the greatest profusion (it was here that Michaux obtained this species), *Potentilla tridentata* and *Canadensis, Fragaria Virginiana*, the fruit ripe, and of the finest flavour, *Rubus villosus* now in flower, *Castilleja coccinea, Geranium maculatum, Clematis Viorna*, about 8 inches high, *Sanicula Marilandica, Zizia aurea, Heracleum lanatum, Hypericum corymbosum*, with larger flowers than usual; a more upright and larger-leaved variety of *Hedyotis serpyllifolia, Œnothera glauca β., Senecio Balsamitæ, Rudbeckia*

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* Prof. Mitchell in the *American Journal of Science and Arts*, for January, 1839.

triloba, and a dwarf variety of *R. laciniata, Liatris spicata, Cacalia atriplicifolia, Cynthia Virginica, Aster acuminatus, Solidago bicolor, S. spithamæa*, (*Curtis in Torr.* and *Gr. Fl. ined.*, a very distinct dwarf species), *S. Curtisii, Torr.* and *Gr. l. c.* not yet in flower, and *S. glomerata*, in the same state as at the *Grandfather Mountain;* also *Saxifraga leucanthemifolia, Sedum telephioides, Heuchera villosa, Polypodium vulgare*, the dwarf var. of *Hedyotis purpurea* previously noticed, *Scirpus cæspitosus*, and *Agrostis rupestris !* which are confined to the rocky precipice already mentioned. The only tree is *Abies Fraseri*, a few dwarf specimens of which extend into the open ground of the summit; and the following are all the shrubs which we observed, viz.; *Diervilla trifida, Menziesia globularis, Vaccinium erythrocarpum, Rhododendron Catawbiense*, forming very dense clumps, *Leiophyllum serpyllifolium, Sorbus Americana* 2-4 feet high, *Cratægus punctata* only a foot in height, *Pyrus arbutifolia* var. *melanocarpa, Ribes rotundifolium ;* and a low and much branched species of *Alder*, which Mr. Curtis proposes to call *Alnus Mitchelliana* in honour of Professor Mitchell; but we fear it may prove only a variety of what we deem the *A. crispa*, (*Ait.*) from the mountains of New York, New Hampshire, and Newfoundland, although it has more rounded leaves, with the lower surface nearly glabrous, except the primary veins; while in the former (to which the names of *A. crispa* and *A. undulata* are not very appropriate,) the foliage is often, but not always, somewhat velvety-pubescent beneath. To our list must be added an apparently undescribed species of *Vaccinium*, first noticed by Mr. Constable.[*] We made a

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[*] *Vaccinium Constablæi*, (*sp. nov.*); pumilum, foliis deciduis ovalibus pallidis subtus glaucis reticulato-venosisque glanduloso-mucronatis integerrimis vel obsoletissime serrulatis ciliatis, racemis brevissimis sessilibus, bracteis squamaceis parvis caducis, corollis brevissime cylindricis, antheris inclusis muticis, ovariis 10-locularibus, loculis pluri-ovulatis.

In summo jugo '*Roan Mountain*' dicto, (Tennessee et Carolina Septentrionali), ad alt. 6000 pedes. Julio floret.—Frutex 1-3pedalis, erectus, hasty visit to the other principal summit, where we found nothing that we had not already collected, excepting *Arenaria glabra*, (*Michx.*), and descended partly by way of the contiguous *Yellow Mountain.*

Retracing our steps, we returned next day to the foot of the *Grandfather Mountain*, and reached our quarters at Jefferson the second day after. We had frequently been told of an antidote to the bite of the *Rattle-snake* and *Copper-head*, (reptiles not unfrequent throughout this region,) which is thought to possess wonderful efficacy, called *Turman's Snake-root*, after an "Indian Doctor," who first employed it; the plant was brought to us by a man who was ready to attest its virtues from his personal knowledge, and proved to be the *Silene stellata!* Its use was suggested by the markings of the root beneath the bark, in which these people find a fancied resemblance to the skin of the Rattlesnake. Nearly all the reputed antidotes are equally inert, such herbs as *Impatiens pallida*, &c., being sometimes em-

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ramis griseo-viridibus teretibus. Folia sesqui-biuncialia, lato-ovalia vel elliptica, utrinque sæpius acuta, glabra, nisi costa supra puberula et margines ciliati, subsessilia, infra saturate glauca. Racemi 5-10-flori, sæpe corymbosi, ad apicem ramulorum anni præcedentis solitarii vel aggregati. Baccæ immaturæ cœruleæ, glaucæ, limbo calycis majusculo coronatæ, decem (nunc abortu quinque?)-loculares; loculi pleris (3-6?) spermis.—Prof. Dunal (in D.C. prodr. 7, p. 566), notices as an extraordinary exception to the character of *Vaccinium*, a species with an 8 to 10-celled fruit, and a single (?) seed in each cell. The first-named character is not unfrequent in the genus, several of the more common species which I have cursorily examined, exhibiting a more or less completely 8-10-celled ovary, but with many ovules in each cell. There is a small group, however, (DECACHÆNA, *Torr. et Gr. ined.*), presenting a different structure, which is best exemplified in *V. resinosum, Ait.* The 10 carpels of this species, enclosed in the baccate calyx, are very slightly coherent with each other, and become crustaceous or bony nuts, each containing a single ascending seed. The same is the case in what I take to be *V. dumosum* and *V. hirtellum*, and probably in some other species which have the leaves sprinkled with resinous dots. *V. frondosum, Willd.* (which is the *V. decamerocarpon* of Dunal), is similar in structure, except that the carpels appear to be more coherent and less indurated.

ployed; so that we are led to conclude that the bite of these reptiles is seldom fatal, or even very dangerous, in these cooler portions of the country.

About the foot of the *Roan* and *Grandfather*, we obtained a few specimens of *Pycnanthemum montanum, Michx.* (Monardella, *Benth.*) just coming into blossom. Our plant accords with Michaux's description, except that there are frequently 2, or even 3 axillary heads besides the terminal one. The flowers have altogether the structure of *Pycnanthemum*, and the upper lip of the corolla is entire; so that it cannot belong to *Monardella*, although placed as the leading species of that genus.

As to the species from which Mr. Bentham derived the generic name, (*Pycnanthemum Monardella, Michx.*) I am by no means certain, that it belongs either to *Pycnanthemum* or *Monardella*. The specimen in the Michauxian Herbarium is not out of flower, as has been thought; but the inflorescence is undeveloped, and perhaps in an abnormal state. In examining a small portion, taken from the head, I found nothing but striato-nerved bracts, obtuse and villous at the apex, and abruptly awned; the exterior involucrate and often lobed; the innermost linear, and tipped with a single awn. The aspect of the plant, also, is so like *Monarda fistulosa*, that I am strongly inclined to think it a monstrous state of it, or some nearly allied species; in which case, the genus *Monardella* should be restricted to the Californian species. Pursh's *P. Monardella*, I may observe, was collected beneath the Natural-Bridge in Virginia, where we also obtained the plant, and subsequently met with it throughout the mountains. It is certainly a form of *Monarda fistulosa*, according to Mr. Bentham's characters; but the taste is much less pungent, the throat of the calyx less strongly bearded than is usual in that species, with the corolla nearly white. We thought it probably distinct; but these differences may be owing to the deep shade in which it commonly grows. The *P. Monardella* of Elliott, according to his herbarium, is identical with that of Pursh. We collected in Ashe County several other species of *Pycnanthemum*, and in the endeavour to discriminate them, we encountered so many difficulties, that I am induced to give a revision of the whole genus.*

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* CONSPECTUS PYCNANTHEMORUM.

§ 1. *Calyx vix bilabiatus; dentibus bracteisque subulato-aristatis, rigidis, nudis, corollam æquantibus. Verticillastri densi plerumque terminales. Ovaria barbata. Folia subpetiolata, rigida.*

1. *P. aristatum,* (*Mx.*); foliis breviter petiolatis ovato-oblongis acutis subserratis basi rotundatis cauleque tenuissime canescenti-tomentosis vel glabris.—P. setosum, *Nutt. in Jour. Acad. Philad.* 7, p. 100, excl. syn. *Pursh.* Origanum incanum, *Walt. herb.*

HAB. A Nova Cæsarea ad Floridam.—Folia floralia nunc candicantia.

2. *P. hyssopifolium,* (*Benth.*); foliis subsessilibus lineari-oblongis obtusis subintegerrimis cauleque glabris vel tenuissime subtomentoso-canescentibus.—P. aristatum, *Pursh,* (fide spec. in *herb. Lamb.* et *herb. Bart.*), *Nutt.* et *Ell.*

HAB. A Virginia usque ad Floridam et Louisianam.—Duæ species arcte affines optime dignoscuntur in *Benth. Lab. gen. et spec.* Stamina e fauce corollæ subexserta.

§ 2. *Calyx bilabiatus; nempe dentibus* (*plerumque subulatis, sæpe pilis rigidiusculis barbatis*) 3 *superioribus in labio superiore basi coalitis. Verticillastri cymosi, laxi. Ovaria sæpius barbata. Folia petiolata.*

3. *P. albescens,* (*Torr. et Gray, fl. N. Am. ined.*); verticillastris cymosis, dentibus calycis æqualibus triangulari-lanceolatis obtusiusculis muticis, foliis oblongis ovato-lanceolatisve subserratis utrinque acutis supra glabris subtus canis.

HAB. In Louisiana, *Ingalls, Hale,* et Alabama, *Gates.*—Minus per totum quàm *P. incanum*; foliis superioribus, ut in aliis utrinque candidis, cæteris cauleque pube brevissima incanis. Ovaria ad apicem brevissime barbata.

4. *P. incanum,* (*Michx.*); verticillastris cymosis, dentibus calycis subæqualibus lanceolato-subulatis, apice plerumque 1-2 setosis, foliis ovato-oblongis remote serratis basi rotundatis pubescentibus subtus albo-tomentosis, floralibus utrinque candidis.

Folia ampla. Ovaria ut vidi villoso-barbata, non "apice attenuata, appendice paleaceo acuminata."—Mihi ignotum est P. Loomisii, *Nutt. in Jour. Acad. Philad.* 7, *p.* 100, quod in characteribus datis omnino P. incano convenit.

5. *P. Tullia,* (*Benth.*); verticillastris cymosis, (floribus omnino explicatis in ramos subsimplices arcte secundis), dentibus calycis bilabiati subæqualibus e basi lanceolata longe subulato-aristatis bracteisque apicem

Some additional plants were obtained around Jefferson, which were not previously seen in blossom, such as *Campanula divaricata, Cacalia reniformis, Silphium perfoliatum,* the larger form of *Coreopsis auriculata,* with nearly all the leaves

versus pilis longis barbatis, 2 inferioribus tubum æquantibus, foliis oblongis acutis vel acuminatis subserratis petiolatis cauleque villoso-pubescentibus, floralibus dealbatis.—Tullia pycnanthemoides, *Leavenworth, in Sill. Jour.* 20, *p.* 343, *t.* 5.

Variat 1, calyce imberbi, *fide Benth. Lab. suppl. p.* 728, (Carol. Austr. *Mitchell*); 2, foliis ovato-oblongis basi aut rotundatis aut acutis (sic legimus in comitatu Ashe et invenit cl. *Curtis* in com. Burke, Carol. Sept.); 3, foliis lanceolatis utrinque acutis vel attenuatis (cum præcedente legimus). In stirpe *Leavenworthii* (ad *Paint Mountain,* Tennessee Orient. exeunte Octobri decerpta), rami fructiferi, cymæ subsimplices elongatæ sunt, densifloræ, floribus sessilibus arcte secundis.—Exstat specimen in *herb. Bart.* cum schedula, "*P. montanum? Mich.* in Virginia juxta Staunton," manu Purshii inscripta. Dentes calycini attenuato-subulati, pilis setiformibus longissimis articulatis plerumque barbati; 2 inferiores labium superius subæquantes, nunc paulo superantes. Ovaria pilis paucioribus barbulata.

6. *P. dubium,* (*sp. nov.*); verticillastris cymosis, dentibus calycis bilabiati subulatis bracteisque pilis longis barbatis, 2 inferioribus tubo labioque superiore brevioribus, foliis lanceolatis utrinque acutis subintegerrimis glabriusculis petiolatis, caule villoso-pubescente.

HAB. In Carolina Septentrionali, comitatu Ashe, cum *P. Tullia,* et *P. piloso β.,* vigens, ubi legimus ad finem Julii. *P. Tulliæ* nimis affinis, sed differt, (an satis?) foliis angustioribus fere integerrimis, nunquam incanis vel dealbatis, dentibus calycis brevioribus et inæqualibus, ovariis calvis nec barbulatis, etc.—Folia 2-3-pollicaria, semipoll. lata, acutissima, ad venas m. pubescentia. Bracteæ et corolla præcedentis.

7. *P. clinopodioides,* (*Torr. et Gray, fl. N. Amer. ined.*); verticillastris contractis, dentibus calycis subæqualibus brevibus subulatis bracteisque canescenti-pilosis, foliis oblongo-lanceolatis utrinque acutiusculis subserratis breviter petiolatis supra glabratis subtus cauleque molliter pubescenti-villosis.

HAB. In siccis circa urbem Novum Eboracum et in Nova Cæsarea. Aug. floret.—Caulis pedalis et ultra, pube molli laxa vestitus, subsimplex. Folia 2 3 pollicaria, nunquam dealbata; pagina superiore sæpe glabra; inferiore, præsertim ad costam et venas, villoso-pubescente. Bracteæ breviores quàm in præcedente, et minus barbatæ. Dentes calycis tubo fere dimidio breviores, 3 superiores basi satis coaliti. Stamina modice

undivided; the glabrous and narrow-leaved variety of *C. senifolia* (*C. stellata, Nutt.*) which alone occurs in this region; *Melanthium Virginicum*, a very handsome plant, with the flowers cream-flowered when they first expand; and *Ste-*

exserta. Ovaria barbata.—Stirpes angustifoliæ versus sequentem, latifoliæ ad *P. incanum* tendentes vel transeuntes?

§ 3. *Calyx subæqualiter dentatus. Verticillastri laxe capituliformes, plerumque terminales, corymboso-paniculati. Bracteæ floribus breviores. Ovaria sæpius calva. Folia vix petiolata.*

8. *P. Torreyi*, (*Benth.*); calyce subæqualiter dentato, dentibus subulatis bracteisque pubescenti-canescentibus, foliis lineari-lanceolatis oblongo-linearibusve glabriusculis acutis vix serratis basi in petiolum brevissimum sensim angustatis, caule stricto pubescente.—P. Virginicum, *Nutt. gen.* 2, *p.* 33.?

Hab. In Nova Cæsarea, et circa urbem Novum Eboracum, ubi frequens; etiam in Carolina Australi, ex *Benth. Lab. suppl.*—Facies aliquantum P. *lanceolati*, sed facile distinguitur, foliis longioribus (minus rigidis) basi longe attenuatis verticillastris contractis nec capitatis, bracteis plerisque subulatis haud adpressis, dentibus calycis gracilioribus, corolla ampliore magis ringente, et staminibus exsertis.

9. *P. pilosum*, (*Nutt.*); calyce subinæqualiter dentato, dentibus ovato-lanceolatis acutis bracteisque canescenti-villosis, foliis lanceolatis subintegerrimis basi acutis subsessilibus caule ramisque erectis molliter pubescentibus aut villosis, floralibus nunquam dealbatis.—P. muticum, *Benth. Lab. p.* 329, partim.—Variat. 1, calyce fere æqualiter 5-dentato; 2, dentibus calycinis 3 superioribus basi manifeste coalitis; et, ni fallor,

β. Leptodon: calyce fere æqualiter dentato, dentibus longioribus e basi lata acuminatis vel subulatis bracteisque (acuminatis) villoso-canis.—An species?

Hab. In civitatibus occidentalibus, ab Ohio et Tennessee ad Missouriam et Arkansam. Var. *β.* in comitatu Ashe, Carol. Sept. legimus etiam cl. *Boykin* e Georgia misit.—Species ab *P. mutico* certissime diversa, habitu, pubescentia, foliis minus rigidis basi angustatis, dentibus calycis dense villoso-barbatis, etc. Ovaria apice obsolete barbulata.

10. *P. muticum*, (*Pers.*); calyce æqualiter dentato, dentibus triangulari-ovatis brevibus bracteisque muticis pube brevissima canescentibus, foliis rigidis ovatis vel ovatis vel ovato-lanceolatis acutis sæpius serratis basi rotundatis (nunc subcordatis) sessilibus subpetiolatisve, inferioribus cauleque laxe paniculato glabris aut tenuiter subtomentosis, summis dealbatis.—Brachystemum muticum, *Michx. fl.* 2, *p.* 6, *t.* 32. Pycnanthemum muticum, *Benth.* l. c. partim?

nanthium angustifolium, Gray, which is doubtless the *Helonias graminea* of the Botanical Magazine.

We also made an excursion to "*White Top,*" in Virginia, twenty miles north-west from Jefferson; a mountain of the

HAB. Masachussetts usque ad Louisianam. — Folia 1-3 uncialia, nunc exacte ovata, nunc ovato-oblonga vel sublanceolata, interdum serrata ut in icone *Michx.*, haud rarius serraturis sparsioribus vel obsoletis, basi semper rotundata. Verticillastri capituliformes, pauci, parvi, bracteis acutis calycem æquantibus. Ovaria calva.

§ 4. *Calyx æqualiter dentatus. Verticillastri dense capituliformes, bracteis rigidis adpressis suffulti, numerosi, paniculato-corymbosi, fere omnes terminales nunc subfasciculati. Corollæ labia brevia. Ovaria calva. Folia sessilia, angusta, crebra.*

11. *P. lanceolatum,* (*Pursh*); dentibus calycis brevibus triangularibus (sæpe acutis) bracteisque ovato-lanceolatis villoso-tomentosis, foliis lanceolatis linearibusve integerrimis rigidis glabriusculis basi obtusis sessilibus, caule ad angulas pubescente.—Brachystemum Virginicum, *Michx.*

Variat foliis nunc lato-lanceolatis, nunc anguste linearibus, rarissime (spec. in *herb.* T. Carey, vidi) subserratis. Stamina sæpius inclusa, haud rarius vel duo vel omnia exserta, labia corollæ subæquantia!

12. *P. linifolium,* (*Pursh*); dentibus calycis lanceolato-subulatis bracteisque (e basi ovata vel lineari subaristatis) rigidis glabrescentibus, foliis anguste linearibus rigidis integerrimis sessilibus cauleque glabris.

Stamina nunc inclusa, nunc subexserta.

§. 5. *Calyx æqualiter dentatus. Verticillastri dense corymbosi, terminales, paniculati, bracteis laxis, interioribus brevissimis. Ovaria calva. Folia brevia, remotiuscula, sessilia.*

13. *P. nudum,* (*Nutt.*); glabrum pallide virens, dentibus calycis triangulari-lanceolatis brevibus pilosis, bracteis exterioribus lanceolato-linearibus interioribus brevissimis subulatis, foliis ovato-oblongis integerrimis sessilibus, caule simplici stricto.

§ 6. *Calyx æqualiter dentatus. Verticillastri* (*ampli*) *subglobosi, bracteis plurimis suffulti, solitarii, terminales, aut sæpius in axillas foliorum parium 2-3 supremorum arcte sessiles. Ovaria barbata. Folia subpetiolata.*

14. *P. montanum,* (*Mx.*); capitulis globosis, bracteis acutissimis villoso-ciliatis exterioribus ovatis intimis linearibus, dentibus calycis brevibus acutis, foliis ovato-lanceolatis serratis acutis inferioribus basi rotundatis cauleque glabris.—P. montanum, *Nutt. gen.* 2, *p.* 33, et, sic opinor *Mx. fl.* 2, *p.* 8, igitur Monardella montana, *Benth. Lab. p.* 331.

HAB. In altis montibus Carolinæ, *Michaux.* Ad jugum quod dicit "*Catawba Ridge,*" Carol. Sept., *Nuttall.* Ad radices Montium *Grandfather, Roan,* etc., legimus, et olim invenit *Curtis.*—Julio-Augusto

same character as the *Roan*, but on a smaller scale, and with the pasturage of its summit more closely fed down. We were not rewarded, however, with any new plants, and the cloudy weather obscured the prospect, which is said to be very extensive. On our return, we found *Cedronella cordata*, (*Benth.*) nearly out of flower, with runners often 2 or 3 feet in length. Mr. Bentham has omitted to mention the agreeable balsamic odor of the genus, which in our plant is much less powerful than in *C. triphylla*. We saw plenty of *Cimicifuga Americana*, but the flowers were still unexpanded. Our endeavours to obtain the fruit of *Cimicifuga cordifolia* (common in this region,) were likewise unsuccessful; without them it is not always easy to distinguish this species from *C. racemosa*. The leaflets of the former are frequently very large, the terminal ones resembling the leaves of the Vine in size and shape, as remarked by De Candolle, in one instance we found them 10 inches in diameter; but they are generally much smaller and more divided, apparently passing into the former species. The number of ovaries does not afford marked characters, since the lowest flowers of *C. racemosa* sometimes present 2, while the upper ones of *C. cordifolia* are almost always monogynous.

floret.—Caulis 1-3pedalis, simplex vel ramosus. Folia submembranacea; inferiora 2-3-pollicaria, lanceolata-ovata, basi rotundata, petiolo brevi: superiora magis lanceolata, sensim acuminata, basi acuta subsessilia: pagina superior, rami, et sæpe bracteæ, dum soli expositæ, purpurascentes. Bracteæ acuminatissimæ; extimæ flores æquantes. Calyx tubulosus, pilis conspersus, denique subglabratus; dentibus brevibus triangularibus acutis. Corolla cerina, intus maculis purpureis notata, ringens; labio inferiore profunde trilobato, lobo medio longiore; superiore integro! Stamina longe exserta. Antheræ loculis parallelis. Styli lobi (ut in cæteris *Pycnanthemis*) sæpe inæquales. Ovaria apice villoso-barbata.

Species inquirendæ.

P. Monardella, *Mx.* verisimiliter est Monardæ species! (cf. adnot. supra). Certissime Monarda est P. Monardella, *Pursh!* (fide herb. *Lamb.* et *herb. Bart.*) etiam Elliottii! P. verticillatum, *Pers.* (Brachystemum verticillatum, *Michx. fl.* 2, *p.* 6, *t.* 31), est species mihi valde dubia. An recte cl. Benthamius ad P. lanceolatum attulit?

We were too early in the season for several interesting plants, especially *Compositæ*, and did not extend our researches far enough south to obtain many others; such as *Hudsonia montana*, which appears to be confined to Table Mountain, *Rhododendron punctatum*, *Stuartia pentagyna*, *Philadelphus hirsutus*, *Silene ovata* (which Mr. Curtis found in Buncombe and Haywood counties,) *Berberis Canadensis* (collected, however, by Pursh on the mountains of Greenbrier in Virginia,) *Parnassia asarifolia*, (which, according to Mr. Curtis, first appears in Yancey County, but Pursh procured it from "mountain runs on the *Salt Pond Mountain*, Virginia, and on the top of the Alleghanies near Christiansburg;") and above all, the new *Thermopsis!* (T. Caroliniana, *Mr. A. Curtis, MSS.*,) recently discovered by our friend Mr. Curtis, in Haywood and Cherokee Counties. We were likewise unsuccessful in our search for a remarkable undescribed plant, with the habit of *Pyrola* and the foliage of *Galax*, which was obtained by Michaux in the high mountains of Carolina. The only specimen extant is among the "*Plantæ incognitæ*," of the Michauxian herbarium, in fruit only; and we were most anxious to obtain flowering specimens, that we might complete its history, as I have long wished to dedicate the plant to Prof. Short of Kentucky, whose attainments and eminent services in North American Botany are well known and appreciated both at home and abroad.[*]

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[*] Shortia, *Torrey and Gray.*

Calyx quinquesepalus; sepala imbricata, squamacea, striata, persistentia, exteriora ovata, interiora oblonga. Corolla .... Stamina .... Capsula calyce brevior, subglobosa, stylo filiformi (subpersistente) superata, trilocularis, loculicide trivalvis, valvis medio septiferis, placenta centrali magna persistente. Semina numerosa, parva; testa nucleo conformis. Embryo teres, rectiusculus, albumine brevior.—Herba cæspitosa? subacaulis, perennis, glabra; foliis longe petiolatis, rotundatis, subcordatis, apice nunc retusis, crenato-serratis, crenaturis mucronatis; scapis unifloris, nudis, apicem versus squamoso-bracteatis.

S. galacifolia, Torr. et Gray. (*vid. spec. sicc. in herb. Mx.*, cum schedula, "Hautes Montagnes de Carolinie. An Pyrolæ spec.? an genus novum?")

We left this interesting region near the end of July, returning to New York by way of Raleigh, Richmond, &c.; and found a marked change in the vegetation immediately on crossing the Blue Ridge. I cannot extend these remarks to the plants gathered on our homeward journey, except to mention that the *Schrankia* of this part of the country, which is found as far as the eastern slope of the Blue Ridge, is the *S. angustata*, (Torr and Gr.); at least, we observed no other species. This is doubtless the *S. uncinata* of De Candolle; but not, I think, of Willdenow: I may here observe, that the reticulated-leaved species, (*S. uncinata*, Torr. and Gr.) is the *Leptoglottis* of De Candolle, (Mém. Légum.) as I have ascertained from a fragment of the original specimen in the rich herbarium of Mr. Webb, obligingly sent by that gentleman. But I find no neutral flowers or sterile filaments in the numerous specimens of this plant, from different localities, which I have, from time to time, examined.

Botanical Excursions in SOUTH AFRICA, *by* C. J. F. BUNBURY, ESQ.

(Continued from page 41 *of vol. II.)*

3. *Graham's Town and its Neighbourhood.—Fish River Bush. Animals.—Excursion into Cafferland.—Interviews with the Chiefs of the Tslambie, Congo, and Gaika Tribes.—Fort Armstrong.—The Kat River and Fort Beaufort.—Physical Characteristics of the Hottentots.*

GRAHAM'S Town, the second town of the colony in point of size and (at present) of importance, is an ugly ill-built place, very inferior in appearance to Uitenhage and Zwellendam, and looking like a bad imitation of an English town. It is situated in a hollow, surrounded by long flat-topped hills of moderate height and gentle slope, which are here and there rocky, but for the most part covered with short grass. Nothing can be tamer or more unpicturesque than the outlines of these hills, and on a general view the country appears very naked and dreary. But there are many pretty wooded ravines and shady nooks concealed among these bare hills, which are well worth exploring. In these the vegetation is often luxuriant and beautiful; the trees grow to some considerable height, and various climbing plants twine round them and hang from their branches, or interlace them with rich garlands of foliage. The massy sandstone rocks, grey with lichens, and often assuming the appearance of ruined buildings, half hidden among the evergreen bushes, add to the beauty of these little dells. Here grows in great abundance that singular tree called the *Nojeboom,*[*] with large and jagged leaves of a very fine green colour, springing in radiating tufts from the very ends of the branches, which are otherwise bare. The *Acacia* or *Doornboom,* a very tall Aloe, and numerous other thorny shrubs, are likewise characteristic of the vegetation of these dells (Note A); but the most remarkable of all their plants is an arborescent *Euphorbia,* which grows to the height of forty or fifty feet, with a thick rough trunk and a broad flat head almost like that of a pine tree; it has no leaves, but its younger branches are very succulent, thick, green, angular, beset with spines all along the angles, and curved upwards like the arms of a candelabrum. I do not know any tree of a more singular appearance. It is full of an excessively acrid and caustic milk, which gushes out in great quantity whereever an incision is made.

The places that I found most favourable for botany in this neighbourhood, were a ravine above the house at that time occupied by the Lieutenant-Governor on the west side of the town, and the southern face of the long and high ridge of hill behind the barracks on the south side of it. This hill rises from the town with a long, smooth, grassy slope of very easy ascent; its ridge is narrow, and the descent on the other side very steep, in some places quite precipitous and rocky, in others covered with bush, and affording a vegetation far more copious than that of the town side. From the top the view extends in one direction to the sea, over an undulated grassy country variegated with wood; in the other to the high mountains of Cafferland, among which the Winterberg (distant about sixty leagues) makes a conspicuous figure.

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[*] *Cussonia spicata.*

The hills on the north and east of Graham's Town are considerably lower than those near the barracks, and expand at the top into smooth, grassy table plains of great breadth. A peculiar rocky knoll, in the shape of a truncated cone, overlooking the town from the east, is known by the name of Lynx's Kop, and noted as being the station from which the famous Caffer Chief Makanna, or Lynx as the Dutch called him, directed the desperate attack on Graham's Town, in 1819. This man, who pretended to a divine mission, had acquired by his arts a prodigious influence over the Caffers, and succeeded in engaging several of the tribes in a combined attack on the town, which was then in its infancy; his object was nothing less than the total expulsion of the whites from Albany and the adjoining districts, and he had contrived to persuade his followers that by his magical arts he would be able to render harmless the bullets of the enemy. Abandoning, therefore, the insidious mode of fighting which is usually practised by the frontier Caffers, they advanced openly to the attack in dense masses and with great fury, but were at length routed by the severe fire of the English troops. Upwards of five hundred of them, I was told, remained dead on the spot, and considering their extreme tenacity of life, the wounded must be estimated at three or four times that number. For some time afterwards, it is said, the bush between this town and the frontier swarmed with vultures, attracted by the corpses of those who had perished in their retreat. If there had been a force of cavalry at hand to follow up the victory, the Caffers would probably not have become again troublesome to the colony in the present generation. Makanna himself did not fall in the battle, but was taken prisoner soon after, and sent to Robben Island, in Table Bay, the ordinary place of confinement for felons. By what right we could treat an independent chieftain as a criminal, is not easy to say.

The Great Fish River is distant, in the nearest part, about twelve miles from Graham's Town, and the great tract of bush which borders it throughout its course, in some places approaches within six miles of the town. This Fish River Bush, so noted in the history of the late Caffer war, is a tract of country of most rugged and savage character; not exactly mountainous, but a chaos of great hills, which run generally in long flat ridges, with very steep but not rocky sides, and are divided by extremely deep, narrow, gloomy valleys; hill and valley alike covered with impenetrably thick bush, as dense as the undergrowth of a Brazilian forest, and much more thorny. I cannot conceive a country more difficult to make one's way through. The shrubs are in general the same as those which occur near the Sunday River; but, in addition, there is abundance of the great *Tree-Euphorbia*, which I have described a few pages back, of the *Strelitzia*, (at this time out of flower,) and of the *Zamia horrida*, with its stiff, spiny, palm-like leaves springing from the top of a short thick stem which looks like a pine-apple.

I never saw in any other part of the world anything resembling the Fish River Bush; nor, I should think, does there exist a tract so difficult to penetrate or to clear. The vegetation is so succulent that fire has no effect on it even in the dryest weather, and at the same time so strong and rigid and excessively dense that there is no getting through it without cutting your way at every step, unless in the paths made by wild beasts. Yet the Caffers make their way through with wonderful skill and activity, creeping like snakes among the thickets, where no white man can follow them; and this covert extending so far along the frontier, is of great advantage to them, both in their predatory and hostile incursions, as they can muster in force and even approach to within a few miles of Graham's Town without being observed.

Not more than twenty years ago, I have been told, the Fish River Bush swarmed with Elephants and other wild beasts. Mr. Clarke once saw fifty elephants together near

Trompeter's Drift, about thirty miles from Graham's Town; but the active war waged against them for the sake of their ivory, by the Albany settlers, the more frequent passage of men and cattle through those wild tracts, the patrolling and fighting in the bush during the late Caffer war, have put these aboriginal inhabitants to the rout. At the present day, it is said, not an elephant is to be found in any part of the Fish River Bush. The rhinoceros and buffalo still exist there; but the former, the most dangerous of all the wild beasts of this country, is become extremely rare. The hippopotamus, or sea cow as the Dutch call it, though much reduced in numbers, is still to be found near the mouth of the river. All the larger kinds of antelope have become far scarcer than they were formerly within the bounds of the colony, and some are quite extinct. The high, open table plains called the Bontebok Flats, lying to the north-east of the Winterberg, are still famous for the abundance of large game. Many officers who had visited them for the sake of hunting, assured me that the immense multitudes of wild quadrupeds, especially of the Quagga, the Gnoo or Wildebeest, the Blesbok, and the Springbok, which were there to be seen, were really astonishing. Lions are frequently to be met with on those Flats, though much reduced in number by the exertions of the sportsmen. It is said that the lion will seldom attack a man, at least a white man, unless provoked; when roused he generally walks away at a slow pace and with an air of great deliberation and tranquillity, seeming to say, "I will let you alone if you let me alone;" but if pursued or fired at, he attacks in his turn with great fury. I had always supposed that this was a solitary animal, but the officers who had hunted on the Bontebok Flats, all concurred in asserting that it was usual to meet with several lions together, sometimes as many as seven or eight.

I must not enlarge on the wild sports of South Africa, which I did not myself witness, and of which a copious and amusing account has been given by Captain Harris. When I was at Fort Beaufort, I saw some admirable drawings, executed by an officer of the 27th regiment, and which gave a most lively idea of the style of hunting on the Bontebok Flats.

In the neighbourhood of Graham's Town I met with few wild animals, though I wandered over the hills for several hours almost every day. The ground indeed is everywhere perforated by the burrows of the Ant-eater or *Aardvark*, and the broken and excavated ant-hills bear witness to his operations; but he very rarely stirs out of his hole by day, and I never was able to meet with him. The hyæna, which is common enough in this neighbourhood, is likewise a nocturnal animal. One day as I was walking along the top of the high hill already mentioned, behind the barracks, I had a good view of a large bird of prey, which I easily recognised as the Bearded Eagle, or Lämmergeier of the Swiss. I was already aware that this noble bird was a native of Southern Africa, as well as of the Alps and the Himalaya, but I did not expect to see him at such a moderate elevation above the sea. Perhaps he had his home among the cliffs of the Winterberg, and had come thus far in quest of prey.

The climate of Albany is considered very healthy, although subject to sudden and violent changes of temperature. It is on the whole remarkably dry; rain is unfrequent, and very uncertain as to the times of its occurrence; but when it does come it is always from the south or south-east, as in that direction the country is open to the sea. The dry winds from the west, north-west, and north, often blow with great violence and are excessively annoying; for, like the south-easters at the Cape, they raise stifling clouds of dust. During part of the time we remained here, indeed whenever it did not blow hard, the weather was extremely pleasant, and the air singularly clear and pure. The sunsets were often strikingly beautiful, the western sky being all in a glow of the deepest and clearest gold or orange, while the light clouds opposite to it were tinged with an exquisitely pure rose colour.

The elevation of Graham's Town is said to be nearly one thousand feet above the sea level, and of course its climate is considerably colder as well as dryer than Cape Town, but there was no frost during the period of my stay.

April 29.—After remaining about a fortnight at this place we set out for Cafferland on the 29th, and journeying eastward, over a high and open country, reached Fraser's Camp, a small military post about twenty-five miles from Graham's Town and six from the Great Fish River. From the highest hill on our route, called the Governor's Kop, we had an excellent view of the mountains of Cafferland and the Ceded Territory, some of which are supposed to exceed six thousand feet in height.

Fraser's Camp, where we passed the night, had been a little before this the scene of a tragical event. Some soldiers of the Hottentot corps, or Cape Rifles, who were quartered here, mutinied, at the instigation, it is supposed, of the Caffers, and fired into a hut where a party of officers were sitting, killing one of them, a Mr. Crowe. The mutineers were however disarmed by the other troops, and being tried by a court-martial fourteen of them were sentenced to death; the Governor caused only two of these to be executed; some who were least guilty were pardoned, and the rest sent to work in chains on Robben Island. If credit could be given to the confession made by one of the criminals, this abortive outbreak was connected with an extensive conspiracy, of which the Caffer chief Umkai, of the Tslambie tribe, was the prime mover. The Caffers, aided by the Hottentot mutineers, were to have seized on the military post of Fort Peddie, on the other side of the Fish River, marched upon Graham's Town by night, surprised the 72nd regiment in the barracks, and fired the town; indeed, according to the same authority, they expected no less than to be able to drive the English back to Cape Town, and to partition the colony between them. There is little doubt that Umkai had been in correspondence with the mutineers, and had secretly instigated them to violence, probably hoping that such a degree of confusion might be created, as would give him an opportunity of breaking into the province of Albany and sweeping it of cattle, which are the grand objects of Caffer warfare. But it may very well be doubted whether this crafty chief had ever really entertained a design so extravagant as that mentioned in the confession.

April 30.—Leaving Fraser's Camp, we crossed the Great Fish River at Trompeter's Drift, and proceeded to Fort Peddie, which is situated on an elevated grassy plain near the little river Chusie or Clusie, about twenty miles from our last station. The Fish River Bush is less broad in this part than in many others, probably not extending more than six miles on each side of the river; but it is of most intricate and formidable character; the hills of very considerable height and tremendously steep, but of a remarkable uniformity of shape. They might be compared to inverted sarcophagi. At Trompeter's Drift there is a small military post, in a most burning spot. The officer who commanded here at this time had adorned his hut with various spoils of the chase, in particular the skull of a hippopotamus, the skin of a leopard, heads of baboons and wild boars, horns of the buffalo and of several kinds of antelope; all which animals he had killed in the neighbouring bush. The Great Fish River, where we crossed it, did not appear to me to be wider than the Wye at Monmouth, and had but little water in it, except in some places where it formed deep pools among the rocks; between these hollows its stream was rapid and shallow, with a hard rocky bottom; its banks beautifully fringed with the weeping willow (Note B) and other trees of a like graceful character. This river is subject, at uncertain times, to violent floods, and has been known to rise as much as seventy feet above its ordinary level; sometimes, on the contrary, it is so far dried up as to become a mere string of pools, without any current at all.

May 1st.—The next day we rode about six miles farther eastward, to a missionary station at the head of the Beeka River, where the Caffer chiefs of the tribes Congo and Tslambie had assembled to meet the Governor. There were present, of the former tribe, the chiefs Cobus Congo, Pato, and Kama; of the latter, Umhala, Umkai, Gazala, and Noneebe the widow of Dushani, and about three hundred Caffers of inferior rank. The chiefs were in English dresses, mostly old uniforms which had been given them by the Lieutenant-governor and other authorities on the frontier, and which did not become them at all; but the multitude, in their national dress, with their cloaks either wrapt round them, or hanging in loose folds over one shoulder, so as to expose the greatest part of their athletic figures, had a most picturesque appearance. The conference took place in the church; the Governor, Lieutenant-governor and their party occupying a platform at one end of it, while the natives filled the rest of the building. It was a curious and striking sight, to behold these dark warriors, some wrapt in their cloaks, others naked, but armed with their clubs or *kirries*, sitting in profound silence, and in attitudes of earnest attention, with their intelligent countenances and keen eyes turned towards the speakers, whom they never interrupted. I certainly never saw a public meeting in England half so orderly. I was reminded of the accounts that are given of the North American Indians, and of their demeanour on occasions like the present. Several of the chiefs spoke, but not at any great length, all professing the greatest aversion to war, and the utmost satisfaction at the pacific and friendly language used by the Governor. The principal topic of discussion was the charge against Umkai, of instigating and abetting the meeting in the Cape Corps. He defended himself with considerable art and ingenuity, but by no means satisfactorily. The conference, however, ended very amicably. After it had broken up, when the Caffers had resumed their *assagais*, and were standing or lounging about in knots and groups in the open air, I was struck more than ever with the picturesque and noble appearance of these fine barbarians, whose tall and well-proportioned figures, with the unstudied grace and ease of their attitudes, and the disposition of their scanty drapery, would, I think, have delighted a painter. Yet the conference at Block Drift, three days afterwards, presented a scene still more interesting than this.

There were no Caffer women present on this occasion, except the Queen Noneebe and her attendant, who wore European dresses. As we were riding back to Fort Peddie, these two ladies passed us on horseback, riding astride, with their petticoats up to their knees, and trotting along in gallant style.

From Fort Peddie to Block Drift on the Chumie, the country is beautifully varied with hill and dale, wood and pasture; and in many parts the broad grassy lawns, dotted with trees and clumps of shrubbery, give it quite a park-like character. The variety of surface and the richness of the verdure, made it very superior to anything I saw within the bounds of the colony, and the broad, open, elevated ridge along which we travelled, gave us a good commanding view. The direction of our journey was, to the westward of N.

May 2nd.—On the 2nd, after travelling a distance which was variously estimated at fifteen, twenty, and twenty-two miles, we pitched our tents in a very pretty wooded valley, near the deserted post of Fort Willshire, on the Keiskamma. Here we passed a miserable night, for a bitter wind blew with such fury, that it every minute threatened to overturn the tents, and the cold was so intense that it was impossible, for me at least, to sleep at all.

May 3rd.—During the whole of the next day, the wind continued to blow with such violence as to rival the terrible *vent de bise* of the South of France, and to make our journey very unpleasant. We arrived, early in the afternoon, at the house of Mr. Stretch, the political agent or resident of the British government, near Block Drift. Here we were very hospitably entertained, but as there was not room in the house to lodge any besides the Governor, I passed the night in one of the waggons, where I found myself more comfortable than I had been in the tent.

On the following day, the Governor held a conference with the chiefs of the Gaika tribe, of whom the principal were Macomo, Tyali, Botma, and Eno. This was a still more picturesque scene than that at the Beeka, for the meeting was held in the open air, in a wide green meadow, dotted with fine acacia-trees. The principal Caffers seated themselves on the grass in a semicircle, around the little group of English who attended the Governor; the rest stood on the outside, and the rich uniforms, the scarlet and gold, and swords and feathers of the officers, made a striking contrast with the dusky and naked savages. What added, perhaps, to the exciting interest of the scene, was the feeling that we were quite in the power of these people, who being between three and four hundred in number, and all armed, could, in all probability, easily have overpowered the little handful of Europeans; and though, in point of fact, there was no reason to distrust them, one could not but reflect that they might, if they chose, cut off at one blow the Governor and Lieutenant-governor of the colony, and the Commandant of the frontier. The discussion, though it ended peaceably, was much more animated than on the former occasion; many of the Caffers speaking with much vehemence and warmth of manner, and with great fluency of language; and even through the medium of an interpretation, it was impossible not to be struck with their art and address in debate. All the speakers professed, whether sincerely or not, an aversion to war, and a desire to remain on good terms with the English; but they complained of the insufficient extent of their territory, and dwelt much on the injustice done to Gaika by a former government, in depriving him of a part of his country, the Kat River settlement, after professing to look on him as a friend; they asked why, when the greater part of their territory was restored to them by the last treaty, which professed to redress all their wrongs, this was not restored likewise? This was evidently a sore point with them, and some of their speakers dwelt upon it with great force and pertinacity. It was urged particularly by Macomo, and by one of Gaika's old captains, a man of most noble appearance. When this man stood up with his staff in his hand, and harangued with a grave earnestness of manner, and with much but not extravagant gesticulation, throwing back his cloak, and displaying his naked and statue-like figure, I thought that a finer specimen of uncultivated human nature could hardly be conceived. Much being said concerning the depredations committed within the British frontiers by the Caffers of this tribe, the chiefs disclaimed all participation in these practices, professed great indignation against the thieves, and urged the colonial authorities to punish without mercy all whom they could detect; but an old man, who spoke subsequently, declared very frankly that in the matter of thievery they were all alike, chiefs and people, and illustrated his meaning by a metaphor more forcible than delicate. I remarked that in general, on this as well as on the former occasion, the Caffers behaved with great decorum, and were very careful not to interrupt any of the speakers. Their language seemed to me soft and agreeable to the ear; they spoke very distinctly, and in general slowly, with much emphasis, and with more or less of a peculiar cadence, which in some cases sounded almost like singing, without any of the strange *gobbling* sound which I have often remarked in the speech of the negroes. In their language, as in that of the Hottentots, many words are pronounced with a certain *click* of the tongue, which is difficult to imitate; yet this peculiarity was but slightly perceptible in the pronunciation of the speakers whom I heard at the two conferences. It is said to belong, among the Caffers, only to the *Amakosa*, who inhabit the country between the Great Fish River and the Bashee, and who are supposed to have borrowed it from the Hottentots.

The celebrated chiefs Macomo and Tyali, who took the most prominent part in the late Caffer war, dined with us at Mr. Stretch's, and behaved quite like gentlemen, seeming quite accustomed to European habits, and perfectly at their ease. We had much conversation with them by means of an interpreter. They showed a quickness of repartee, and a tact and dexterity in conversation, which would have done credit to civilized men. Macomo is of shorter stature than the generality of the Caffers, with a very keen, shrewd, intelligent countenance, though he is said, unfortunately for himself, to be excessively addicted to drinking. Tyali, his brother, is considerably taller and handsomer, but does not look equally clever.

It is now pretty generally admitted that the Caffers belong to the negro race of mankind, but the characteristic peculiarities of that race, with the exception of the woolly hair, are less strongly marked in them than in the natives of Guinea or Mosambique; the lips are less thick, the nose less flat, the lower part of the face is not remarkably prominent, and the forehead is often as high and as amply developed as in Europeans. (Note C). The colour of the skin appeared to me, in most of the individuals I saw, to be a dark umber-brown, frequently approaching to black, while in others it had a tinge of yellow or red; but the skin is so often smeared with red ochre, that it is not easy to judge accurately of its real native tint. The Caffer men are in general tall, though not gigantic, and extremely well proportioned; indeed their fine forms and easy attitudes often remind one of ancient statues; but they are more remarkable for activity than for strength, and it is said, have generally been found inferior in muscular power to British soldiers. They wear no clothing except the skin cloak or *karass*, and this is worn only as a protection against weather, not with the view of concealing any part of the body. The skins of which these cloaks are made, are dressed in such a manner as to be as soft and pliable as glove-leather, and acquire a red-brown colour, which is not at all unpleasing to the eye. Many of the chiefs wear mantles of leopard's skin, prepared with the hair on. They ornament their hair, on great occasions, with red-ochre, which is applied in a very elaborate manner, the hair being twisted up into a multitude of little separate knots or lumps, and every knot carefully covered over with grease and ochre. This process, which is performed by the women, is said to be very long and tedious; but the appearance which results from it, though whimsical in our eyes, is considered by them as highly ornamental. In truth, I do not see that this practice is in any degree more barbarous or irrational than that of covering the hair with white powder, which not long ago was so fashionable in the most civilized parts of Europe.

The Caffer women, of whom I did not see a great many, are not so well shaped or so good-looking as the men, but have very good-humoured countenances. The chief distinctive peculiarity in their dress is that they do not go bareheaded like the other sex, but wear a cap of dressed leather, shaped a little like a turban, and decorated with beads and brass buttons. Their cloak, which is generally much ornamented with these same articles, is arranged more decently than that of the men, being in general wrapt close round them, and covering them from the throat to the ancles; but the unmarried women sometimes fasten it round the waist in the manner of a petticoat, leaving the upper part of the person exposed. Beneath this garment they wear a diminutive apron of the same material, covered with beads.

Among the Caffers who assembled at Block Drift, was a very strange-looking personage, a son of the chief Eno. His form and features were like those of the other Caffers, but the colour of his skin a disagreeable reddish-white, not like the ordinary complexion of Englishmen, but with a stronger and more uniform tint of red, so that he looked somewhat as if he had been scalded or half-flayed, and had certainly a most repulsive appearance. His hair was of a sandy-yellow colour, but as woolly as that of his countrymen. He was tall and robust, and was considered as a bold and able warrior, though said to share in the weakness of sight which has often been remarked in Albinos.

Another remarkable personage present at the conference was Sutu or Sootoo, the chief widow of Gaika; her bulk was immense, and her figure most extraordinary, the projection behind rivalling that of the famous Hottentot Venus. This truly marvellous accumulation of fat in the rear is, as it appears, not quite confined to the Hottentot race, for Sutu is a

Tambookie Caffer, as the "great wives" of the chiefs of the Amakosa are most usually. It is very possible, however, that she may have some Hottentot blood in her.

All the Caffers at Block Drift, with the exception of their chiefs, were armed with their national weapon, the light spear or javelin, which they themselves call *Umkonto,* but to which the colonists have given the name of *Assagai.* It has a slender shaft about five feet long, made of the very tough and elastic wood which the Dutch call *Assagai-hout,* and an iron head or blade, somewhat like that of a lance, generally without any barb, but sharp at the edges as well as at the point. The whole thing is very light, and is but a paltry weapon against European troops; it can be thrown fifty or sixty yards with effect, but beyond that distance they have no certainty of aim. Another weapon used by the Amakosa is the *Kirrie* or *Keerie,* which is simply a thick stick of a very hard and heavy wood, with a knob at one end; this is likewise used as a missile, and it is said that they can bring down birds on the wing with it. A considerable number of these people are now provided with fire-arms, and though, as yet, few are expert in the use of them, there seems to be no reason why the Caffers should not in time become as skilful marksmen as the North American Indians. They will in that case be truly formidable enemies in the bush. Macomo, I have been told, is a good shot. The frontier colonists, notwithstanding their dread and hatred of these people, have been induced by the allurements of gain to supply them with muskets and ammunition, and it is said that an active contraband trade in these articles has been carried on in spite of the military posts.

Whether the Amakosa can be called a brave people, may admit of doubt; certainly the mode in which they carry on their warfare, at least against the English, does not exhibit this quality, if they possess it. Their practice is to avoid open encounters as much as possible, and not to attack in a body unless they have an immense superiority of numbers. They lurk in the bush, hang on the flanks and rear of the hostile troops, throw their assagais from behind thickets and rocks, and disperse and creep away under covert if attacked. Their desperate assault on Graham's Town, in 1819, was the most remarkable deviation from this system, and their disaster on that occasion has probably deterred them from repeating the experiment. Accordingly, in the last war, they inflicted but little loss on our troops, and as far as could be ascertained, did not suffer very much in return. Nor can they, with any reason, be blamed for avoiding open encounter with men whose superiority of weapons and of skill they have experienced, or for carrying on the war in the manner most safe and advantageous to themselves.

These people are, I am told, remarkably tenacious of life, so that hardly any wound which is not immediately fatal, will prevent them from effecting their retreat; and often, when mortally hurt, they will run like deer for miles before they drop. Living in a peculiarly fine and healthy climate, subsisting chiefly on milk, and neither wasted by toil nor pampered with indulgence, they are subject to few diseases. But many of them, especially the chiefs, have suffered much from the introduction of spirituous liquors. The late Gaika, of whom there is an interesting account in Barrow's Travels, is said to have perished mainly from this cause.

May 5th.—I now return to my narrative. Leaving Block Drift very early in the morning, we travelled over a beautiful, verdant, hilly country, with much wood, to Fort Armstrong on the Kat River. It is surprising how superior the country beyond the Great Fish River is, in point of beauty, to that on the colonial side of the stream; and it is said to improve still farther after you cross the Keiskamma. But this fine territory is not considered so valuable for grazing, as much of that within the colony, for the grass is in general what is called "sour;" that is, rank and unwholesome for cattle.

Leaving behind us the rich and picturesque basin of the Chumie, and taking a direction about N.W., we passed under the brow of the Katberg, a fine mountain-range clothed with wood, and descended to the valley of the Kat River, which is one of the principal tributaries of the Great Fish River.

The situation of Fort Armstrong is remarkably picturesque. The river comes winding with a graceful sweep round the high tongue of land on which the fort is built, and the hills on the left bank rise steeply from the water's edge, in parts covered with thick woods of Euphorbias and other strange trees, in others showing bold escarpments of sandstone rock, half mantled with creeping evergreens. At some distance, on the N. and N.W., are high and picturesque mountains, among which the craggy peak of the Didima is the most conspicuous. The cliffs near the river are stratified with remarkable distinctness, in thick horizontal beds, which are divided by vertical fissures into regularly rectangular blocks, so as to give to the whole a striking resemblance to the ancient Etruscan walls of Cortona and Fiesola.

We remained here the whole of the 6th. The cutting wind from which we had suffered two or three days before, had died away, and the severe cold was succeeded by very great heat; such are the rapid alternations usual in this climate, which is nevertheless extremely healthy. Fort Armstrong, standing on a naked rock, and half surrounded by steep hills which reflect the glare of the sun, is extremely hot, nor is it considered by the officers as an agreeable quarter.

At this place I saw a young gnoo, which belonged to an officer of the 75th Regt., and was so tame and fearless that it took food from off the breakfast-table, and could hardly be driven away. In the structure of this animal there is a curious mixture of the characters belonging to the buffalo and to the antelope tribe; the former predominating in the shape of the head, the horns, and the neck, the latter in the slender and flexible limbs, while the thick mane standing upright along the ridge of the neck, and the flowing tail which resembles that of a horse, complete the singularity of its appearance. In their wild state, as I have been told, when chased or alarmed, the gnoos always run in a single file, one following another, often to the number of several hundreds, butting with their heads and kicking up their heels as they go. The young one that I saw seemed good-natured, though very bold, but the full-grown untamed animal is fierce and dangerous.

The next day, turning towards the S.W., we proceeded along the green valley of the Kat River, between very high and steep hills, indeed almost mountains, which are partly covered with thick wood, and partly with a kind of open shrubbery of acacias. The hills, throughout this part of the country, have a general tendency to the flat-topped or table shape. We repeatedly crossed the river, which flows in a very tortuous channel, deeply sunk between steep banks, and overhung and almost concealed by a thick growth of weeping willows and other trees. Our day's journey, of about twenty-seven miles, ended at Fort Beaufort, where, as everywhere else in this frontier tour, I met with the greatest hospitality and kindness from the officers. This military post is situated on a somewhat elevated platform or peninsula, almost encircled by the Kat River, which is rapid and muddy, but neither broad nor deep, and is confined between very high, almost precipitous, thickly-wooded banks.

May 8th.—We spent the 8th at Fort Beaufort, from whence two days' journey, in a direction somewhat to the westward of S., brought us back to Graham's Town. We passed the intermediate night at Tomlinson's Inn, on the banks of the Koonap, not far from its junction with the Great Fish River, and next day forded the latter stream near Fort Brown, where it is much less considerable than at Trompeter's Drift. The country between the two rivers, and southward to within five or six miles of the town, is extremely rugged, and covered with thick bush. From Fort Beaufort to Graham's Town is a journey, not including stoppages, of fifteen hours in an ox-waggon, and may thence be estimated at about forty-five miles.

We were escorted in this little tour by detachments of the Hottentot corps, or Cape Mounted Rifles, who are, or were at that time, the only cavalry in the colony, and seem well suited for the frontier service. The officers are English, the men partly of mixed breed and partly genuine Hottentots. These latter people, of whom I saw a considerable number in Graham's Town and its neighbourhood, have a most peculiar and repulsive physiognomy. The form of the face is singularly angular, owing to the excessive projection of the cheek-bones, the shrunk and pinched appearance of the lower part of the cheeks, and the sharpness of the chin; the mouth is prominent and the lips thick; the eyes very small and narrow, and rather obliquely placed; the forehead depressed; the nose flattened in a remarkable degree, so that the upper part of it appears to be quite obliterated, while the nostrils are large and wide. The colour is a light and slightly yellowish brown, very like that of a dead oak-leaf. The plates in Le Vaillant's Travels do not at all exaggerate the usual ugliness of this strange race; but whether his account of their moral character is correct, I cannot tell. I never saw any of them in their original state of wild independence, and if they ever were such as he describes them, they have sadly deteriorated by the contact of civilized man.

The Hottentots are mostly of small stature; the majority of those in the Cape corps, at least of the new levies, are under five feet high, and they are possessed of very little muscular strength. Their hands and feet are small and delicate, in which particular they differ very remarkably from the negroes.

The number of genuine Hottentots within the colony at the present day, is small compared with that of the mixed breeds, or Bastaards as they are called, in whom the blood of the aboriginal race is crossed with that of the Dutch, the negro, or the Malay. The Bastaards are much superior in size and strength to the Hottentot race.

NOTES TO CHAPTER IV.

(A) The following list contains the most remarkable plants which were in blossom in the wooded dells or kloofs near Graham's Town, during the months of April, May, and June:

Anemone Caffra.
Eugenia Zeyheri, Harv.
Ficus, sp.
Rhus, 2 sp.
Brachylæna dentata, De C.
Euryops spathaceus, De C.
Gamolepis euryopoides, De C.
Burchellia Capensis.
Bunburia elliptica, Harv.
Niebuhria venosa (new sp.)
Testudinaria sylvatica.
Pelargonium zonale.
Podalyria lancifolia, E. et Z.
Dolichos.
Ochna arborea.
Halleria lucida.
Streptocarpus Rexii.
Justicia, 2 sp.
Plectranthus, 2 sp.
Thuia cupressoides.
Clematis brachiata.
Myroiphyllum asparagoides.

Among rocks, in more exposed and sunny situations, I noticed particularly:

Crassula lycopodioides, De C.
C. falcata, and other sp. of the same genus.
Mesembrianthemum tigrinum, and several other sp.
Senecio subnudus, De C.
Cineraria saxifraga, De C.
Euryops Algoensis, De C.
Tephrosia grandiflora.
Psoralea bracteata.
Indigofera, sp.
Acrostichum, sp.
Pteris Calomelanos.
Aspidium coriaceum.

And on the grassy hills:

Heliophila virgata.
Hermannia plicata.
H. polymorpha, E. *et* Z.
Struthiola tomentosa.
Dais, 2 sp.
Helichrysum anomalum, De C.
H. subglomeratum, De C.
H. squamosum, Th.
H. cephaloideum, De C.
H. nudifolium, De C.
H. teretifolium, De C.
Gladiolus floribundus.
Tritonia securigera (?)
Trichonema roseum.
Dolichos Capensis.
Cluytia ericoides.
Monsonia ovata.
Polygala simplex.
Senecio concolor, De C.
S. triplinervis, De C.
S. pinifolius.
Kohautia Amatymbica, E. *et* Z.
Chænostoma polyanthum, Benth.
Nycterinia Capensis, Benth.
Gomphocarpus crispus.
Erica curviflora.

The plants common to the neighbourhood of Cape Town and that of Graham's Town, are not very numerous. The following list contains those which I observed:

Protea cynaroides.
Fusanus compressus.
Erica cerinthoides.
Tarchonanthus camphoratus.
Calla Æthiopica.
Lobelia coronopifolia.
Todea Africana.
Psoralea pinnata.
Tephrosia Capensis.
Chironia baccifera.
Myrsine, sp.
Cliffortia strobilifera.
Mesembryanthemum edule.

The Heaths and Proteas are comparatively rare in this part of the colony; so likewise are the *Restiaceæ*, which are the most abundant of all plants in the south-western districts, but which are here, in great measure, superseded by real grasses. On the other hand, certain tribes of plants, which are almost or quite wanting in the western districts, are represented in the eastern by several species; such, in particular, are the *Acanthaceæ*, *Apocynaceæ*, *Bignoniaceæ*, *Rubiaceæ*, and *Capparideæ*. It is remarkable, also, that these are groups which belong chiefly to tropical regions; and that the *Flora* of the eastern part of the Cape colony thus seems to approximate more to that of the tropics than does that of the western part, although the temperature of Albany is not higher (indeed, if anything, rather lower), than that of the Cape district. From what little we know of the plants of the Natal coast, it would seem that the tropical character there becomes more decided, and that the peculiar vegetation of the Cape is gradually shaded off, as it were, into that of equinoctial Africa.*

Three large species of *Aloe* are very common in the environs of Graham's Town, where their tall and stately spikes of glowing red flowers form the most striking ornaments of the rocks and ravines. The tallest kind, which frequently grows to the height of fifteen feet and even more, is the *Aloe arborescens*, pretty well represented in Redouté's "Plantes grasses." A second is the same which I have mentioned in note D to the preceding chapter, and which I suppose to be *Aloe ferox*. Of the third I can find no figure; it is perhaps *Aloe lineata* of Haworth, and of the 2nd edition of "Hortus Kewensis," but the very brief and unsatisfactory character of that genus is not sufficient to identify it. The flowers of this third kind are exactly like those of *A. arborescens*, but the stem is seldom more than five feet high, and remarkably thick; the leaves are much shorter than those of the above-mentioned species, straight, not recurved, flat on the upper side, moderately convex on the under, edged with short, close-set, reddish-brown prickles; their colour is a deep green, and they are marked with numerous, longitudinal, straight veins or ribs, which as far as I have seen, are peculiar to this species, and seem to entitle it to the name of *lineata*.

(B) The weeping willow which abounds on the banks of the Fish River, Kat River, and other streams of the Caffer country, is not the true Babylonian Willow, commonly cultivated in England, but a distinct species, very similar in its mode of growth, and almost equally beautiful.

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* See Harvey's Genera of South African Plants.

(C) I must say, that I never saw a Caffer resembling the portrait which is given in Dr. Pritchard's work on the History of Mankind (ed. 3, vol. 2, plate 5); it may have been like some one individual, but it is by no means a characteristic specimen of the race.

It is a curious fact, stated in that work, that the Caffer language resembles the Coptic, in forming the tenses of verbs, and the numbers and cases of nouns, by *prefixed* syllables, not by changes of termination as in the European languages. The prefix *Ama*, in the Caffer tongue, marks the plural number, as in *Amokosah* the plural of *Kosah;* and they have a great variety of other prefixes.

BOTANICAL INFORMATION.

Swan River Botany.

The late letters from Mr. Drummond have brought the following information respecting Swan River Botany.

"By a ship now about to sail (January 16th, 1843), I send two fine species of *Anigozanthus*, collected by my son in the vicinity of the Moore River. Of the golden-flowered kind I gave some account before;* it is highly beautiful, and, though approaching *A. flavida* in character, is readily distinguishable from all the varieties of that truly protean plant, by its sickle-shaped, hairy leaves. The dark-flowering one, of which but two specimens have ever been found in bloom, is a real *mourning-flower;* the upper portion of its stem and lower portion of the corolla being covered as with a black velvet; the corolla is deeply cleft and expands about 2 inches. This species is not allied to any other *Anigozanthus* yet discovered in the Swan River settlement.

During my journey to the South, it came to my knowledge that the natives use the tuberous roots of *Anigozanthus flavida* for food, selecting such as are going to flower the following year. The terminations of the roots of such plants are about the same size as those of the *Florentine Iris*, and when in the state above specified, contain much starch; the natives call them *Cattitch*. Along with the *Anigozanthus*, you will find a few seeds of the beautiful *Boronia*, detected by Mrs. Molloy, and which I have named *B. Molloyæ*."*

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* See vol. i, p. 627-8, for a description of this and several other beautiful species of *Anigozanthus*.

April 26th, 1843.

" I feel auxious respecting the safety of two boxes which were despatched to you in January last. They contain about five hundred species of plants, not sent to you before, among them three or four new genera of *Proteaceæ* and two most beautiful species of *Anigozanthus;* the yellow-flowered one I consider to be the very loveliest plant which this country can boast. There are also several letters and journals of mine in the box.

I have lately obtained another species of *Dryandra*, or perhaps *Hemiclidia*, for it answers to the character of that genus in possessing a seed-vessel, densely covered with long ferruginous hairs, its substance thin and opening at the top and sides; the seeds are wingless; but it differs by bringing sometimes two seeds to maturity, and in other characters.

The plant has the true habit of *Dryandra;* it is a low, much-branched shrub, and the flowers, which I have only seen in a withered state, are produced on the old stems; the style appears very long in proportion to the size of the inflorescence, and is villous, with long hairs at the lower part. The discovery of this shrub is due to my youngest son, who gathered it in the Moore River district.

In my former letters I mentioned to you Mrs. Molloy as a most ardent botanist, who had detected many of the finest productions of this country, and both cultivated them herself in her garden in Vase district, and sent seeds to Captain

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* See vol. ii, p. 169 and 171.

Mangles, thus introducing them to England. I am sorry to tell you that I have just heard of her decease, in the prime of life. This melancholy event frustrates the hopes I had entertained of her transmitting to you a particular account of the plants in her neighbourhood, which she had purposed doing; but Providence has willed it otherwise.

We have a most curious little plant, now in blossom, which I suspect to belong to *Cyperaceæ,* but cannot refer it satisfactorily to any of Mr. Brown's genera. It covers a larger portion of the virgin pastures in Australia than perhaps any other production whatever, being equally abundant on clay, sand, and loam, and growing wherever there is grass, except on the alluvial flats. It springs up in dense patches, from one or two inches to as many yards in diameter, the larger clumps having, no doubt, taken ages to acquire such a size. To me its affinity seems between the *Cyperaceæ* and the *true grasses*; the leaves are grass-like, and about four inches high, somewhat hispid, and having broad, membranaceous, sheathing bases, which inclose the young shoots and the flower-stalk, itself about half an inch high. Immediately below the flowers are three bracteas, analogous to the involucral leaves of the *Cyperus,* and above these are five or six glumaceous bracteas, of a green colour on the back, but their edges are white and membranous, sometimes tinged with purple; in each of these bracteas there is a germen, crowned with a style about three-quarters of an inch long, white or rose-coloured, villous, and cleft nearly half-way down into three or four parts; the anthers are three or four in number, two lines long, and borne on filaments measuring an inch in length. This little plant, as you will perceive by the specimens sent home, is individually quite inconspicuous, and yet it is very remarkable, for in some cases, when in a flowering state, the anthers are so numerous as completely to hide the leaves, giving its tufts the appearance of golden cushions."

September 25th, 1843.

"I have now the pleasure of sending a box of seeds for the

Royal Gardens at Kew, and only regret that the number of species is not so great as I could wish, owing to the impossibility of collecting largely during a journey made with loaded pack-horses, except near the places where we stop for the night. There are a number of small sets of seeds which I should wish to sell, if you can obtain me any purchasers of them; in all, even the smallest, of these collections there are abundance of seeds of the splendid *Boronia Molloyæ,* the yellow *Anigozanthus,* and several other new and interesting plants.

I also transmit a series of letters on the Botany of our colony, published in the "Enquirer," a Swan River newspaper; and though incomplete, for some of them are missing, they contain the fullest information I have been able to give of those plants used for food by the natives. There are also five or six sheets of notes, descriptive of those plants which I have sent you, especially the *Cryptogamia;* of the latter tribe there are upwards of three hundred species in the different boxes, which afford a fair idea of the productions of our colony in the way of *Mosses,* &c. If any of the purchasers of my *Phænogamous* plants should be desirous of having the Swan River *Cryptogamia* also, I shall be happy to supply them, and will take care to procure the *sea-weeds,* which the distance of this place (Hawthornden) from the coast has hitherto prevented my collecting."

JAMES DRUMMOND.

The Bermuda Cedar.

The following interesting observations on the *Bermuda* or *Pencil Cedar,* figured and described at TAB. I, p. 141, of the last volume of this Journal, have been kindly communicated to the Editor, by his Excellency, Colonel Reid, the Governor of that colony.

" The inhabitants of Bermuda are not aware what the distinctions may be which have induced botanists to class the

Bermuda Cedar as a separate species, and they believe it to be no other than the *Virginian Cedar*, altered and improved by soil and climate. This opinion is not, however, based on exact observation, though attention has recently been directed to this question, in the hope of solving it, by comparing specimens of the two trees.

Neither do they consider the *Bermuda Cedar* as the wood *now* used in the manufacture of pencils in Great Britain; for it is not an article of exportation intended for this object, and it is both harder and of a darker colour than pencils usually are.

Wherever cultivation is neglected, the Cedar springs up in Bermuda, and it comes to maturity in about thirty or forty years. Looking from the tops of the hills, the central and widest part of the islands has the appearance of an uninterrupted forest. Though the trees seldom square to more than eight inches, and work with these dimensions to twenty or thirty feet long, yet the timber is of great value, particularly in ship-building. When felling it for this purpose, part of the root is cut out along with the stem of the tree, and the degree of curvature required for the timbers of a ship is given to it by the angle which the root and the stem form with each other. By this mode, the grain of the wood is never cut crosswise. It does not shrink, and requires no seasoning, but is built into the ships fresh from the forest. Owing to this quality, the Bermuda trading-vessels are drier than any others, and thus possess a great advantage in the carrying-trade of provisions for the supply of the West Indies.

Small as the islands are, they afforded timber enough for the construction of many small vessels for the Royal Navy during the war; and although all their merchant-vessels are cedar-built, there now, in 1843, remain in the woods trees about to go to decay.

Bermuda Cedar is sometimes exported to the West Indies for the construction of buildings, as the *white ants* rarely touch it.*

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* So in England, a chest lined with cedar, preserves furs or woollen articles from the attacks of moths.

The basis of these islands under water must be only matter for conjecture. The coral insect is at work in the sea around them, but the land itself is chiefly formed of sand, composed of finely broken shells and corals, first cast on shore by the waves during storms, and then arranged into little hills by the winds. Saline particles seem to form a crust, which new storms again cover with fresh sand, and thus are the hills formed into laminated rock, none of the layers, however, lying steeper than the sand would roll to. In higher latitudes, frost would annually break up the formation and destroy it; but at Bermuda, water does not freeze. The winters of Virginia are comparatively very cold, and this may perhaps be the reason for a difference in quality in the cedars of the two countries. The softest of the Bermuda rock is cut for building purposely by the carpenter's cross-cut saw, and the finest roots of the cedar-trees are often found to have grown through this soft building-stone. The dark hue of the *Cedar* bestows a sombre appearance on the landscape of Bermuda, yet it is a very valuable gift of nature to the islands. Besides its worth as timber, being an evergreen of the earliest growth, it is admirably well adapted to form shelter against high winds, which, of all lands, small islands, lying in mid-ocean, require the most. Under the shelter of the *Cedar*, the little vallies between the undulated hills, are capable of forming the finest orange-groves; for the Bermuda orange is of large size and of excellent quality.

The *Bermuda Cedar*, where it has room enough to expand itself, is of a conical shape, with wide-spreading branches at bottom, and when healthiest, with a slender-pointed top. If neglected, the trees grow close together, and their slender summits striking against their nearest neighbours in storms of wind, become broken, to the great injury of the trees. In a young state, they may be trimmed and clipped, as the yew tree, and, like it, formed into a very close hedge. They are difficult to transplant, except when very small, and the entire tap-root taken up uninjured, along with a sod or ball of earth.

The West India Islands have been proved to be too hot for the *Bermuda Cedar*; at least, in St. Vincent, it is but a stunted tree."

W. R.

Boissier, *Botany of Spain and of Greece.*

Our readers will be glad to be furnished with the following intelligence, communicated by M. Boissier.

"Our late political disturbances have caused my correspondence to fall much into arrears. You are perhaps aware that I received a wound during these commotions, and though happily not in itself severe, the consequences of this accident have kept me long indisposed.

My work on Spain is immediately to be resumed, and I trust quickly completed; for all the plates, except four or five, have already appeared, and I have only to give a few general remarks on *Botanical Geography*, and some additions and corrections.

You do me much honour in asking for some particulars respecting my last journey, with a view to their insertion in your *Journal of Botany*; but hitherto I have been unable to comply with this desire. The expedition in question was of too rapid and, if I may so express myself, too superficial a nature, to allow of my making many connected observations; but you may rest assured that I will, if possible, during the approaching summer, draw up a sketch, at least, of the vegetable productions and botanical aspect of the countries which I visited. As regards my collections, I was successful in procuring many fine plants in Greece, where I spent April and the early part of May, botanizing, to my great delight, over those classical localities whose names are full of stirring associations. Mounts Parnassus, Hymettus, and Pentelicus were explored, and Taygetus; the latter, indeed, still much covered with snow. In spite of the noble *Flora Græca*, published by Sibthorp and Smith, much yet remains to be discovered in Greece, and many of the commonest plants are very imperfectly known. It is greatly to be regretted that the enormous cost of the *Flora Græca* should necessarily limit its diffusion, and together with the worthlessness of the diagnoses in the *Prodromus*, render it impossible to make out the species without consulting the beautiful plates. At Geneva this disadvantage is severely felt, and I daily regret it when pursuing my labours.

From the end of May to the middle of July, I spent my time in exploring the environs of Smyrna, the valley of the Meander, part of the plains of Caria, and many of the loftier hills in the districts of Cadmus, and Sypilus. The vegetation there was highly interesting, as it presented a transition between the Mediterranean Flora and that of Asia and the Levant, which latter continued to prevail and to gain the ascendancy. It is remarkable that a country of such easy access should be so imperfectly known as to its botany; most of the species which I gathered are undescribed, if I may judge of the whole from those families which I have hitherto investigated. My excursions were terminated by Constantinople, Broussa, and the Olympus of Bithynia; on the latter I encamped for a week, and found there all the species enumerated by Sibthorp, with others which he does not mention. Towards the close of this summer, I trust that my plants will be arranged and examined, and I shall then feel great pleasure in putting aside a set for you."

Botany in Russia.

Extract of a Letter from DR. VON FISCHER, *of the Imperial Gardens of St. Petersburg.*

March 24, 1844.

"I have not much botanical news to give you. It is probable you have already heard that Trinius, so well known by his labours among the *Grasses,* after much and protracted suffering has quitted this world for a better life. His valuable Herbarium, exclusively *Gramineæ,* he had presented some years ago, to the *Imperial Academy of Science*; and Dr. Ruprecht, (author of a *Monograph of the Bambuseæ*), is now working upon it. Trinius' post at the Academy is not yet filled, but will probably be given to Dr. C. A. Meyer, my assistant and former fellow labourer with Ledebour; it will be an excellent choice on the part of the Academy; and if Dr. Ruprecht, who is clever and well understands his business, should be nominated as Meyer's assistant, it would be well; at present he is only Keeper of the Botanical Museum of the Academy.

Dr. Meyer has begun and nearly completed a *Monograph* of the Brazilian species of *Erythroxylon;* he has got the Berlin and Vienna collections for examination and I expect you will consider the work well done. He is now about to finish, with me, the third *Enumeratio* of Schrank's plants, which you shall receive as soon as complete. We look for the return of Schrank to St. Petersburgh towards the end of the coming summer. I made him promise to penetrate the Trans-Uralian South West Steppes, before leaving Siberia altogether, in order to search for *Pugionium cornutum,* that most interesting and puzzling species, which Bunge transforms, at a touch, from a *Cruciferous* to a *Chenopodiaceous* plant:—a bold stroke, is it not? If found any where in Russia, it must inhabit those parts of the Western limits of Siberia. As soon as Schrank comes back, his plants will be distributed, and you may depend upon receiving a good set. The most interesting production which rewarded his researches last summer, not far from the borders of Lake Balkhash, was unfortunately so rare that he only found four or five specimens: it is a *Cynomorium,* (probably growing on the roots of a *Chenopodiaceous plant*), and is nearly related to *Cyn. coccineum.* Many of Schrank's species have been gathered likewise by M. Karelin, who travelled at the expense of the *Moscow Naturalists' Society.* I suppose you have already received a collection from that Society, for I know it was their intention to send you one.

Professor Bunge of Dorpat is very busy describing the collections which the late Dr. Lehmann made during his journeys to Bokhara and Samarcund: there are several coincidences between them and the plants found by Karelin, Schrank and Bruner (?), but the greater number are new; his observations will hardly be ready for publication before next autumn.

Steven is overwhelmed with administration business and can hardly do any thing for Natural History; he intends disposing of his valuable collections, botanical and entomological, and his library too.

Ledebour's *Flora* is a most meritorious undertaking and a difficult task; but for the assistance of Government he never could have ventured upon it.

Professor Trautvetter of Kiew, who was formerly assistant at the Botanic Garden here, has begun publishing *Icones Plantarum Floræ Rossicæ,* in conjunction with Ledebour, who superintends the engraving of the plates at Munich.

Turchaninoff intends leaving Siberia to settle in the South of Russia.

Professor Middendorff, sent out by the *Academy of Science,* has accomplished the most hazardous journey ever undertaken; he started from Turnkhausk on the Yenissey, crossing the *Tundra,* (you are aware the *Tundra* is the range of snowy deserts towards the Frozen Ocean, where there is no growth of trees whatever), to the Timura (or Tymurah) River. There, in the end of April, the thermometer of Fahrenheit indicated 33 degrees below zero. He fortunately reached the sea in August, but the ice prevented farther progress, and, in returning, he barely escaped with his life, his boat being shattered by the ice. By the end of August, the temperature was again 12 degrees below zero, and heavy snow-storms came on; so that feeling too ill to proceed, he was compelled to send away his companions to seek for assistance, the Samoyedes never going so far North, because of the absence of those lichens which are necessary for the support of their rein-deer. So our poor traveller was left alone, his only shelter being a kind of hole, formed by the snow, and his sole subsistence a portion of his dog, which he had been obliged to kill and divide into five pieces for himself and his companions, together with a snow-grous, which he was so happy as to capture. Thus, solitary and seriously ill of fever, did eighteen long, apparently never-ending days pass over him! At the close of that period, he bethought himself of some zoological specimens in spirits, and having drunk the liquor, he felt sufficiently revived to stir, and reaching an eminence, perceived a moving object on the horizon, which proved to be his companions in search of him, accompanied by some friendly Samoyedes. God's providence thus spared his life! Dr. Middendorff is now recovered and gone to the East, to make new observations. He is a most energetic, undaunted traveller, as these incidents prove, and a very learned and talented naturalist.

Dr. Kolenati, from Prague, is now in Russian Armenia, whence he has sent home many interesting botanical and zoological objects.

Professor Koch of Jena has just returned from Koordistan, and is at Tiflis, whence he means to visit several hitherto unexplored parts of that and the neighbouring provinces.

This is nearly all I have to tell of botanical information. Ere long you will receive our seeds and the catalogue, with some trifling observations.

Your sincerely devoted
FISCHER."

FLORA AZORICA.

We are happy to be able to state that a *Flora of the Azores* is preparing for publication in Germany. Our friend, Mr. H. C. Watson, visited that group of islands in the summer of 1842, and published his very valuable remarks on their vegetation in the pages of the present Journal.* Four years previously, Messrs. Hochstetter and Guthnick spent some time in making botanical researches in the Azores, and the former of these gentlemen, in conjunction with M. Seubert, has been employed on the collections thus formed, and is preparing a work under the title of "FLORA AZORICA, quam ex collectionibus schedisque HOCHSTETTERI patris et filii elaboravit et Tabulis XIV. æneis illustravit MAURITIUS SEUBERT." It is said that it would appear in Germany about Easter, and we trust it will soon arrive in England.

BOTANY OF THE ANTARCTIC VOYAGE.

At page 247 of the last volume of our Journal, will be found some particulars of the Voyage of Her Majesty's discovery ships, EREBUS and TERROR, in the Polar regions of the southern hemisphere, and of the general results in reference to Botany. The several places touched at, and more or less explored, are mentioned, until the return of the vessels to the Cape of Good Hope in the month of April 1843, after spending three summers in the fruitless attempt, notwithstanding the skill and valour of the commanding officer and the courage and bravery of the crews, to reach the South Pole. Still, the shores of a great continent, Victoria Land, clothed with everlasting ice and snow, were discovered and traced for upwards of three hundred miles. These exhibited a mountain region of great elevation, from 9,000 to 12,000 feet, (one of these mountains an extinct volcano), and the latitude of 77½ was attained, several degrees beyond what had been reached by any other navigator. Captain (now Sir James Clark) Ross brought his ships home in safety in October 1843, after a four years' absence, and the collections of Natural History were all deposited in the British Museum, where it was our privilege to see them. Without such an inspection, it would be difficult to form an idea of their extent and value: they reflect the highest credit on the officers of the Expedition. No small part of these collections is constituted by the Herbarium; and so numerous are the species, and such is deemed their interest to the cause of science, that upon a representation being made to Sir Robert Peel by the Lords of the Admiralty, supported by a powerful recommendation from Mr. Brown and Dr. Buckland, that distinguished individual caused a grant to be made from the Treasury in aid of the publication of such portions of the Herbarium as are considered the most valuable; and the Botanist of the Expedition, Dr. Joseph Dalton Hooker, is charged by the Admiralty with the superintendence and preparation of the work. Messrs. Reeve, Brothers, Lithographers in Natural History, and Publishers, King William Street, London, authors of a very beautiful work on Shells, undertake the publication, which is to appear in monthly parts till the whole is completed in 5 vols. royal quarto, with 500 beautifully executed lithographic plates of new or imperfectly known species; coloured and plain. The liberal assistance of government enables the uncoloured copies to be offered at the very low cost of 5*s.* each part, (8 plates and 2 sheets of closely printed letter-press); and even the illuminated copies (coloured from drawings or notes made on the spot), at the scarcely less moderate sum of 8*s.* each number.

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* See vol. ii, p. 1, p. 125, and p. 394.

The Floras of many of the continents and islands visited are too well known to require that they should be even noticed here. It has been thought better to render those of the less explored regions as perfect as the present knowledge of their Botany will allow:—and to divide the publication into three separate and distinct portions, each complete in itself; as follows:

Part I. FLORA ANTARCTICA.

This is intended to embrace a complete history of the Vegetation of the Antarctic Regions, namely, such lands as are situated between the parallels of 50° and 78° south, the utmost limit that has been attained by navigators. It will comprise an account of the plants of Lord Auckland's and Campbell's Islands, of Kerguelen's and the Falkland Islands, of Tierra del Fuego, and of all the south circumpolar regions. Amongst other novelties will be included accounts of the *Cabbage* of Kerguelen's Island, a plant entirely new to science, though discovered and beneficially used during Captain Cook's voyage; the *Tussac* and other grasses of the Falklands; the *Beech-trees*, evergreen and deciduous, of Cape Horn, and many productions of great botanical interest.

In addition to the extensive collections made by the officers of the *Erebus* and *Terror*, during three years spent in high southern latitudes, the still unpublished Herbaria formed by Sir Joseph Banks, Forster and Solander in Cook's Voyage, and Menzies in that of Vancouver, all deposited in the British Museum, are placed at the author's disposal by the kindness of Mr. Brown, as are also the plants of Captain Fitzroy's Voyage, by Mr. Darwin and Professor Henslow. These materials, together with species from private Herbaria, especially that of Sir William Jackson Hooker of the Royal Botanic Garden at Kew, will enable the author to make a very important addition to the extra-tropical botany of the Southern Hemisphere.

No. I. of the Flora Antarctica will appear on the 1st of June of the present year, and will be completed in 20 Parts with 160 Plates; and subscribers are requested to send their names to Messrs. Reeves, No. 8, King William Street, Strand. This will be succeeded by:

Part II. FLORA NOVÆ ZEALANDIÆ;

or, the Botany of New Zealand; and will contain not only all the plants collected by the author in the Northern Island, but will include brief characters and more or less full descriptions, and remarks upon all that have been discovered by other voyagers, especially Sir Joseph Banks, Forster, Menzies, (from the Southern Island), Allan and Richard Cunningham, Dieffenbach, Mr. Bidwill, Dr. Edgerley, Dr. Logan, Dr. Sinclair, and though last, not least in point of importance, the rich collections recently sent to Sir W. J. Hooker by Mr. Colenso, several of whose new species have been already figured in the "Icones Plantarum." During the year and a half that must elapse, previous to printing this part of the general work, it is hoped that many novelties will be received from the middle island, which has as yet been but partially investigated; and we earnestly invite those who may have it in their power to aid in rendering the Flora of New Zealand as complete as possible, that they will kindly do so, by the communication of good specimens. Even in the Northern Island, the lofty mountains have been by no means investigated as they deserve; yet we are well aware that the hasty visits paid to these elevated regions by Dr. Dieffenbach, Mr. Bidwill, and Mr. Colenso, have been productive of several new and very remarkable plants. It has been already mentioned in this Journal that four distinct species of *Beech* have been detected, inhabiting the mountain regions, or the southern extremity of the group; and it is probable that they may be found sufficiently hardy to bear the climate of Britain. One of them (*Fagus fusca*, Hook. Ic. Plant. Tabs. DCXXX, DCXXXI), is already in cultivation in the Royal Botanic Gardens of Kew, but it is as yet too young to be planted abroad with a prospect of success. The Flora Novæ Zealandiæ will form 1 vol. with 140 plates; and will be succeeded lastly by:

Part III. FLORA TASMANICA;

or, the Botany of Van Diemen's Island, in 2, or probably 3 volumes, illustrated with 200 plates. This will in itself be a Herculean task, and the author would shrink from the performance of it, were it not for the aid which has been or will be afforded by his friends, whose names will be more particularly mentioned in the work itself; but it would be unpardonable not to mention on the present occasion the valuable assistance and encouragement already experienced from Ronald Gunn, Esq., the then Private Secretary to the excellent Governor, Sir John Franklin, who facilitated his researches in a way which no other person could have done, and whose communications of new and rare species from districts never before trodden by the foot of a botanist, have enriched Dr. Hooker's Herbarium no less than that of his father. To Mr. Gunn we shall be indebted for the catalogue of Tasmanian plants being more complete than could otherwise have been expected, considering the nature of the country, and the many portions yet unknown to the European.

HOOKER, SPECIES FILICUM, *or Descriptions of all known Ferns. Part II.*

The Second Part of this work, as promised at an early period in the number of our Journal for March, has appeared with its accompaniment of 20 plates, representing no less than 64 species. Of the letter-press the genus Dicksonia (including Balantium, Kaulf. Culcita, Pr. Leptolænna, Pr. Cystodium, J. Sm. and Patania, Pr.), is concluded, and 51 species, including dubious ones, enumerated. Cibotium, Kaulf, (Pinonia, Gaud.), has 6 species; Deparia, Hook. 2. Loxsoma, Br. 1; Hymenophyllum, Sm. 83 species; and Trichomanes includes nearly the same number, but will not be concluded till the following Part. The plates (partly illustrative of the preceding number) contain 3 species of Woodsia, 20 of Dicksonia, 4 of Cibotium, 1 of Deparia, 29 of Hymenophyllum, and 7 of Trichomanes. Part III of this work has been announced by Mr. Pamplin to appear in July.

HYMENOPHYLLACEÆ; *Eine botanische Abhandlung von* PROF. DR. KARL B. PRESL. 4*to. with* 12 *Plates. Prague,* 1843.

Our own MS. of the species of the Genera of Hymenophyllum was scarcely a fortnight in the printer's hands, when we received the work just mentioned, from the able pen of Professor Presl, in which he describes the *Hymenophyllaceæ* as a natural order, distinct from Filices. The work, a pamphlet of 70 pages, is, however, chiefly occupied with the genera, into which the author has deemed it proper to divide this group. We had found it difficult to define with anything like precision the two genera Hymenophyllum and Trichomanes of Sir James Smith, but our author goes much farther. He divides the order into two Tribes, TRICHOMANOIDEÆ (Trichomanes, Sm.), and HYMENOPHYLLOIDEÆ (Hymenophyllum, Sm.). The first of these (Trichomanoideæ) is again formed into two sections: I. TRICHOMANEÆ, Indusii limbus integer, patens v. erectus, truncatus v. repando-crenulatus; including 10 Genera: 1, Feea, Bory. 2, Hymenostachys, Bory. 3, Lecanum, Pr. 4, Cardiomanes, Pr. 5, Trichomanes, Pr. 6, Ragatellus, Pr. 7, Cephalomes, Pr. 8, Neurophyllum, Pr. 9, Microgonium, Pr. 10, Abrodictyum, Pr. Sect. II. DIDYMOGLOSSEÆ. Indusii limbus bipartitus; including 3 Genera: 11, Didymoglossum, Desv. 12, Meringium, Pr. 13, Hemiphlebium, Pr. And Tribe II. HYMENOPHYLLOIDEÆ is divided into 6 Genera, viz: 14, Leptocronium, Pr. 15, Myrmecostylum, Pr. 16, Ptycophyllum. 17, Hymenophyllum, Pr. 18, Sphærocionium, Pr. 19, Hymenoglossum, Pr. The work is illustrated by characteristic figures of the new genera; and here, as well as in the author's "*Pteridologia*," very slight differences in the venation, as well as in the several parts of the fructification, involucre, receptacle, capsules, are employed in the formation of generic characters. An Appendix contains diagnoses of several Hymenophyllaceæ, many of which I think will be found under other names in our Species Filicum; and although it is not too late to give extracts of the characters as a supplement at the conclusion of the genus Trichomanes in our next part, yet I fear it would rather add to than diminish the difficulty of studying the species of this most lovely portion of the Ferns. If our views of what should constitute distinguishing characters in a *Genus* are at variance with those of this acute author, they would appear to be equally so on the subject of *Species*; so that could I clearly understand his species and refer them in my judgment to those previously described (as probably must be done in many instances), it would only serve to multiply the synonyms, already sufficiently numerous. Another source of confusion will arise from the fact that several of Mr. Cuming's species from the Philippine Islands are here described, which the author is aware were named in the 2nd vol. of the Journal of Botany, published in May, 1841, by Mr. John Smith; but which he acknowledges he had not seen. Respecting these, I may just remark *en passant*, that the Trichomanes asplenoides, Pr. is T. curvatum, J. Sm.; T. dimidiatum, Pr. is T. dissectum, J. Sm.; T. saxifragoides Pr. is T. parvulum, Poir. and J. Sm.; T. palmatum, Pr. is T. proliferum, Bl. and J. Sm.; T. Luzonicum, Pr. is T. humile, Forst. and J. Sm.; T. acutum, Pr. is T. glauco-fuscum, Hook.; T. millefolium, Pr. is T. achilleifolium, Willd. and J. Sm.; T. apiifolium, Pr. and T. eminens are both T. meifolium, Bory, and J. Sm.; Didymoglossum serrulatum, Pr. is Hymenophyllum bivalve, Forst. and J. Sm.; and D. longisetum is Trichomanes obscurum, Bl. and J. Sm.

DE CANDOLLE'S *Prodromus, Vol. VIII.*

In our Number for March of the present year this volume was announced as daily expected to arrive in England. It has come, and by this time many of our readers are doubtless in possession of it. The general nature of its contents was there alluded to, and we need only further add, that the son's name which stands in the present title-page, does credit to that of the father. The volume is most appropriately dedicated to that illustrious parent: "Memoriæ suavissimæ Parentis Optimi Alphonsus filius Patria vestigia passu licet non æquo persequutus pio animo dedicabat."

BENTHAM, *Botany of the Voyage of H. M. S. Sulphur.*

We have just received the Second Part of this valuable work, which brings the Californian collection down to the *Chenopodiaceæ*, and it contains some new genera. For example, a new genus of Phytolacceæ, Stegnosperma (Tab. 12.) Among Compositæ, Helogyne (Tab. 14) ;* Perityle (Tab. 15) ; Coreocarpus (Tab. 16); Acoma (Tab. 17), and Amauria. Figures are also given of Calliandra Californica, Benth. tab. 11; Hedyotis asperuloides, Benth. tab. 13; Metastelmon Californicum, tab. 18; Antirrhinum cyathiferum, tab. 19; Hyptis laniflora, tab. 20, (all new species).

SERTUM PLANTARUM, *by* H. B. FIELDING, ESQ. *and* GEORGE GARDNER, F.L.S. *Part II.*

We had occasion to speak favourably of this useful work in a late number of the Journal on receiving the first part of it and we are happy to see a manifest improvement in the present portion, not only in the execution of the plates, as might be expected from the greater experience of the fair artist, but in the subjects also. Tab. 26 is Aplotaxis Simpsoniana, a fine Composita from the Himalayan Mountains; t. 27, Fuchsia pilosa; t. 28, F. confertiflora, both from Peru; and t. 29, F. Caracensis from Caraccas; tab. 30, 31, Polybotrya apiifolia, J. Sm. from Luzon; tab. 32, Asarum Hookeri (A. Canadense β. Hook.) from N. W. America, and no doubt a distinct species; tab. 33, Androstemma junceum, Lindl. Swan River; tab. 34, Gomphia rotundifolia, Bahia; tab. 35, Gomphia Fieldingiana, Gardn. Pernambuco; tab. 36, Agaricus Gardneri, Berk. from Goyaz:—this is the curious phosphorescent Agaric discovered by Mr. Gardner, of which there is an account in the Journal of Botany, vol. ii, p. 427. The whole plant gives out a bright phosphorescent light, somewhat similar to that emitted by the larger fire-flies, having a pale greenish hue. From this circumstance and from growing on a palm, it is called by the inhabitants "*Flor de Coco.*" The plate of this is particularly well executed in chalk-lithographic (the others are done in line) and we almost regret it is not coloured. Tab. 37, Clomenocoma montana, Benth. from Guatemala. Tab. 38, Calycothrix flavescens, A. Cunn. from Swan River. Tab. 39, Tropæolum Bridgesii, from Chili. Tab. 40, Pozoa hydrocotylifolia, Bridges, Chilian Andes. Tab. 41, Allamanda violacea, from Ceara, Brazil, a splendid species with rich violet-coloured flowers, called "Quatra patacas" by the Brazilians, the root, which is powerfully cathartic, is extensively employed by them in malignant fevers. This is an excellent figure. Tab. 42, Chuquiraga chrysantha, Chili. Tab. 43, C. ruscifolia, Gill. from the same country. Tab. 44, Aristolochia truncata, Peru. Tab. 45, 46, Mutisia Candolleana, a splendid species from Bolivia. Tab. 47, Hoskinia montana, Gardn. Organ Mountains, Brazil. Tab. 48, Primula Simensis, Hochst. from Abyssinia. Tab. 49, Ornithopus coriandrinus, Hochst. and Steud., Abyssinia. Tab. 50, Vernonia argyrophylla, Less. Goyaz, Brazil.

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* *Helogyne*, Nutt. Am. Phil. Trans. v. 7, p. 449, which, however, belong to the same groups of *Compositæ* as Mr. Bentham's.

Monographie des MALPIGHIACÉES, *ou Exposition des caractères de cette famille de Plantes, des genres et espèces qui la composent, accompagnée de* 23 *planches, par* M. ADRIEN DE JUSSIEU, *Paris,* 1823-4, 4*to.*

It is with great pleasure we announce the completion of this laborious and important work, from the able pen of Adrien de Jussieu. It is a model for a Monograph and is divided into Two Parts: the first of which appeared last year, and commences with a "Résumé historique" of the family; and then proceeds to Considerations upon the flower in general; then to the different parts of the flower, calyx and its glands, corolla, stamens, pistil, fruit, ovule, seed, embryo, monstrosities, abnormal flowers, inflorescence, leaves, glands, epidermis, hairs, root, stem, stems of the climbing shrubs ("Lianes"), of which the internal structure is minutely described. After the different organs of the *Malpighiaceæ* and their modifications have thus been detailed, the author proceeds to consider the characters to be derived from them and their relative value in determining the genera; he passes in review their affinities and concludes the first portion of the work with some valuable remarks on their geographical distribution; the result of which is given in the following table

OLD WORLD, 55 species.	
Africa, western intratropical	9
„ Oriental intra- and extratropical	5
Madagascar	11
Arabia	2
India, Ceylon	14
China, Cochin-China	2
Isles of Sunda, Philippines	9
Polynesia	3
NEW WORLD, 523 species.	
West Indies	56
Mexico	61
Columbia, (and Trinidad)	45
Guiana	42
Peru	31
Brazil	290
	580

The three plates given with the first part represent, Tab. 1, Arrangement of the parts of the flower together with its development and that of the ovules. Tab. 2, Structure and anatomy of the hairs, glands and leaves. Tab. 3, Anatomy and transverse section of different climbing stems (lianes) of this family.

The Second Part, which has just appeared, is devoted to the characters of the natural order, sections, genera and species, and they are thus divided,

I. MALPIGHIACEÆ DIPLOSTEMONES.

§ I. APTERYGIEÆ seu MALPIGHIEÆ.

1. Malpighia, 20 species.—2. Byrsonima, 71.—3. Burdachia, 2.—4. Coleostachys, 1.—5. Lophanthera, 1.—6. Pterandra, 3.—7. Verrucularia, 1.—8. Galphimia, 10.—9. Spachea, 6.—10. Bunchosia, 23.—11. Echinopterys, 1.—12. Dicella, 4. —13. Heladena, 4.—14. Thryallis, 3.

§ II. NOTOPTERYGIEÆ seu BANISTERIEÆ.

15. Lophopterys, 1.—16. Brachypterys, 2.—17. Stigmaphyllon, 48.—18. Ryssopterys, 6.—19. Banisteria, 59.—20. Peixotoa, 11.—21. Heteropterys, 81.—22. Tricomaria, 1. —23. Acridocarpus, 13.

§ III. PLEUROPTERYAGIEÆ seu HIREÆ.

24. Tristellateia, 8.—25. Hiptage, 6.—26. Triaspis, 4.—27. Aspidopterys; 11.—28. Triopteris, 3.—29. Tetrapterys, 51.—30. Hiræa, 52.—31. Diplopterys, 1.—32. Jubelina, 1. —33. Dinemandra, 2.—33 *bis*. Dinemagonium, 1.

II. MALPIGHIACEÆ MEIOSTEMONES, seu GAUDICHAUDIEÆ.

34. Gaudichaudia, 15.—35. Aspicarpa, 2.—36. Camarea, 7. 37. Janusia, 4.—38. Schwannia, 6.

GENERA NON SATIS NOTA.

39. Caucanthus, 1.—40. Platynema, 1.—41. Bembax, 1.[*] An Analytical Table of the Genera completes this work. In this Second Part are given Plates IV—XXII, illustrating

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[*] 'It will be seen,' M. A. de Jussieu observes, 'that the numbers of the species according to the Table in the geographical distribution, do not correspond with the number here enumerated (549), of which 53 are from the Old World, and 496 from the New. The differences arise, on the one hand, from the species common to several countries, being reckoned over again in each of the countries to which it belongs; and on the other hand, from the fact that they do not come into the calculation, because their country is not correctly determined.

the generic characters of all the Genera, and Tab. XXIII is devoted to a Map of the Genera, arranged according to their affinities, and according to the relation they bear, to allied natural families; viz.: Acerineæ, Hippocastaneæ, Dodoneæ, Sapindaceæ, Erythroxyleæ.

JAUBERT *and* SPACH, *Illustrationes Plantarum Orientalium.*

Livraisons 7—10 inclusive, of this important work are now published, and we hasten to lay before the public a list of their contents:—with the exception of Part VIII, which again by some mistake has not reached our hands.

Tab. 58. Quercus Aucherii, n. sp.; t. 59, Argyrolobium crotalaroides, n. sp. (accompanied by a Conspectus of the species of the northern hemisphere); t. 60. Argyrolobium trigonelloides, n. sp.; t. 61. Taverniera gonoclada, n. sp.; t. 62. T. ephedroidea, n. sp.; t. 63. Botryolotus, (a new genus, allied to *Melilotus*) Persicus, n. sp.; t. 46. Sphærophysa microphylla; t. 65. Stechmannia Stæhelinæ, DC.; t. 66. S. ramosissima, J. et Sp. (*Jurinea*, DC.); t. 67. Derderia (new genus of Compos.-Cynareæ), macrocephala, J. et Sp. (*Jurinea*, DC.); t. 68. Outreya, (new genus of Compos.-Cynar.) carduiformis, n. sp.; t. 69. Lonicera Persica, n. sp.; t. 70. Lonicera nummulariæfolia, J. et. Sp. (Xylosteum arboreum, Webb, It. Hispan.); t. 71. Lonicera orientalis, Lam.; t. 72. Lonicera Caucasica, Pall.; t. 73. L. Aucherii, n. sp.; t. 74. Gaillonia Olivierii, A. Rich. (with a Conspectus of the species); t. 75. Gaillonia Richardiana, J. et Sp. (G. Oliverii, A. Rich.); t. 76. G. incana, n. sp.; t. 77. T. Bruguierii, A. Rich.; t. 78. G. eriantha, A. Rich.; t. 79. Gaillonia hymenostephana, n. sp.; t. 80. Gaillonia calycoptera, n. sp.; t. 81. Gaillonia crucianelloides, n. sp.; t. 82. A. Asperula azurea, n. sp. (with a Conspectus of the species of the sub-genus Sherardiana); t. 82. B. Asperula setosa, n. sp.; t. 89. Statice Androsacea, n. sp. (with a Conspectus of the species); t. 90. Statice Tournefortii, J. et Sp.; t. 91. Statice glumacea, J. et Sp.; t. 92. Statice Hohenacheri, J. et Sp. (S. Echinus, Hohen.—S. acerosa, Bieb.); t. 93. Statice Olivierii, n. sp.

We cannot too highly commend the beauty of the plates of this work, nor the labour and pains bestowed on the descriptions. The *Statices*, all belonging to a very distinct group and section (*Armeriastrum*) are peculiarly interesting, and it were much to be wished they could be introduced to our gardens in a *living state.*

GRISEBACH, *Spicilegium Floræ Rumelicæ et Bithynicæ.*

The First Part of this work, announced at p. 124 of the present volume, has soon been followed by the Second and Third Parts, together comprising the first 46 Orders of Dicotyledonous plants, terminating with *Ericeæ.* The author has here displayed the same talent for discriminating and characterizing genera and species which is so conspicuous in his work on *Gentianeæ,* as well as in his "*Malpighiacearum Brasiliensium Centuria,*" published in the Linnæa, vol. 13. Many new species are described; yet not so many as we should have expected, considering the nature of the country and its numerous mountain districts. But the German and Russian botanists, it must be acknowledged, have been indefatigable in their researches in the alpine regions of the extreme south of Europe, and the time is now arrived when something like a complete Flora of Europe may be undertaken: and this we are happy to say is already announced by Dr. Grisebach, under the title of "Synopsis Plantarum Europæ," and on which he has already for many years been engaged. We trust that this announcement will accelerate the progress of a work on the Plants of Europe by a veteran Botanist of our own country, Mr. Joseph Woods, which we know he has long had in contemplation, on which he has also been for several years engaged, and towards the furtherance of which he has made many journies. Nor will these two publications in any way interfere, for while the latter-mentioned work is to be a detached account, if we understand rightly, of the vegetation in the more frequented parts of Europe, such as are generally visited by tourists, that of Dr. Grisebach will embrace all the plants of *every part of Europe.*

DIETRICH (DR. D.), *Deutschlands Kryptogamische Gewächse, oder* DEUTSCHLANDS FLORA, *6ter Band.* KRYPTOGAMIE.

By the term "6ter Band," on the title page, we are led to infer that this is a continuation of some publication on other plants of Germany. If so, the earlier portion has not come under our notice; nor can we say much in approbation of the present undertaking as far as can be judged from the three Numbers now before us. It contains brief generic and specific characters and coloured figures of all the known species of Germany, without any history, or diagnosis, or synonymes, further than the initials of the author whose name the German species bears. The First Number is devoted to the Ferns, and gives tolerably accurate, but indifferently executed figures of the several species, with very imperfect analyses of the fructifications. The Second and Third Numbers are devoted to Mosses, and include the genera *Hypnum, Leskea, Climacium, Neckera, Fontinalis, Bartramia, Gymnocephalus,* and part of *Bryum*; and if we cannot say much in praise of the Ferns, still less can we commend this portion of the work, which would scarcely have done credit to the author or to the artist a century ago. What a contrast with the "*Bryologia Europæa*" of Bruch and Schimper, and Gümbel! one of the most learned and beautiful works on the subject that has ever appeared, and which we trust to notice more fully ere long, if our leisure will permit us.

The LONDON CATALOGUE OF BRITISH PLANTS; *published under the direction of the* BOTANICAL SOCIETY OF LONDON: *adapted for an Index to British Herbaria; for marking desiderata in exchanges of specimens; for indicating the species of local districts; and for a guide to botanical collectors, by showing the comparative rarity or frequency of the several species. London. Pamplin.*

For several years past various "Catalogues of British Plants" have been issuing from the press, chiefly with the object of facilitating exchanges of specimens between students of indigenous botany. The general plan has been that of giving a full list of the phænogamous plants and ferns, in such form as could be transmitted by post. In using the Catalogues, botanists could readily convert them into lists of their own *desiderata*, by attaching some mark to the names of species required. The usefulness of such Catalogues is apparent enough, not only in effecting exchanges, but for all purposes in which lists of species are required. Seven or eight different forms and editions have been printed, and perhaps several thousands of copies have been advantageously dispersed.

"A Catalogue of British Plants, arranged according to the Natural System, with the Synonyms of De Candolle, Smith, Lindley and Hooker," published by Prof. Henslow, in the year 1829, was probably the first of the lists. But this one being printed as a volume of several sheets, and designed for different purposes, it can scarcely come into the same category with the catalogues for facilitating exchanges. The first of these minor lists, in a post form, appears to have been printed by Mr. H. Watson, in 1832, for private use only; its object being to assist that gentleman in obtaining information, by local lists and specimens, for his admirable works on the *Geographical Distribution of Plants.* Other similar Catalogues shortly afterwards appeared, including the first edition of one published under the sanction of the Botanical Society of Edinburgh.

In all these earlier Exchange Catalogues, the arrangement of the genera was alphabetical, the names corresponding with those employed in the *British Flora*. The same nomenclature still appeared in "A Catalogue of British Plants, included in Vol. I. of Hooker's British Flora, 3rd edition," which was published by Mr. Francis, who substituted the Linnæan method in place of an alphabetical arrangement. The natural system, however, was adopted in an ably compiled Catalogue, published anonymously soon after, and which contained the synonymes of several authors.

In 1841, the Botanical Society of Edinburgh issued a second edition of their Catalogue, much changed, and on which no little trouble had been bestowed by the compilers; three of whose names appeared on the title-page of the one-sheet pamphlet. The alphabetical arrangement of the genera was still retained; but being accompanied also by many alterations in the generic (equally as in the specific) names of the plants, the alphabetical arrangement was thus rendered exceedingly inconvenient in use. Like all the preceding Catalogues, also, the second edition was not truly a list of British plants; but an enumeration of nearly all those species which had been so reported; without any distinction between indigenous and introduced species, between the rare and common, or between those still found by botanists of the present age and other species which are now vainly sought in the localities assigned for them. Thus, it unavoidably led to much disappointment when used as an exchange catalogue, more particularly with foreign botanists, who naturally supposed that their correspondents in Britain took little trouble to procure specimens of the species marked by them, the true reason being unknown, namely, that the plants were either very local or not found at all in Britain. Nevertheless, as being the fullest "Catalogue of British Plants" extant at the time of the publication of the 5th edition of the "British Flora," the author of that work deemed it entitled to quotation among the synonymes, "as one in which especial pains appear to have been taken to form a *complete* list of the native flowering plants and ferns of Great Britain." This little compliment, paid to the labours of those who compiled the Catalogue, has been strangely made the subject of censure in a recent number of the "Phytologist," (a work not always distinguished by courtesy of style); where, after speaking of the "Nomenclature" of Mr. Edward Newman, as employed in the first edition of his "History of British Ferns," and promulgated in 1839-40,—the reviewer assures us, "there was a general denunciation of changes so radical and so complete;" but, after the appearance of Mr. John Smith's paper on the same subject, "Botanists, who one month proclaimed the absurdity of Mr. Newman's innovations, were seen the following month bending the supple knee to the same innovations;" and "Dr. Balfour and Mr. Babington, by adopting the alterations, were the means of disseminating them from John O'Groat's to the Land's End." It seems the author of the *British Flora* did not bend the supple knee to the innovations, and the reviewer proceeds: "But in the midst of its successful career, the new nomenclature met a most decided check in the publication of the fifth edition of Sir W. J. Hooker's *British Flora*, wherein we were astonished to find the changes introduced by Mr. Newman, not only *fathered* upon the authors of the '*Edinburgh Catalogue*,' but the new names given as synonymes, and *the old nomenclature restored in all its glory*.*

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* It is far fom being our general intention to notice remarks made in *reviews* of Books: but the Editor of this Journal, as the Author of the "*British Flora*," must in justice to himself declare that he is not aware that he has in any way acted unfairly by Mr. Newman. He presumes by the expression of "fathering the changes introduced by Mr. Newman upon the authors of the Edinburgh Catalogue," it is meant to imply that he has given to those gentlemen a credit for names ("a nomenclature") which is due to Mr. Newman alone. But surely no one will consider that to be the case, who has seen the little explanation in the preface to the *British Flora*, (ed. 5, p. viii.) It was never meant to imply that the Editors of the Catalogue were the *authors* of those names: and really upon looking at the places among the Ferns where the "*Edinb. Cat.*" is quoted, the difference of names is so trifling that it is marvellous how such a charge

But to return to a more agreeable subject, "The London Catalogue." Apparently, it is now the object of this work to supply an equally complete list of the plants reported to

could, in fairness, any way be made. One would suppose that by "the old nomenclature being restored in all its glory," that the author had gone back to the days of Dillenius or Ray; but, so far at least as the Edinburgh Catalogue is concerned, the difference of names, "fathered" upon the Edinb. Cat., which Mr. Newman's reviewer claims for him, and in the *British Flora*, amounts to these. In the latter work, the genus *Aspidium* of Swartz is divided into two sections; 1st. those species with orbicular involucres, fixed by the centre (*Aspidium*, Br.), and 2ndly. those with reniform involucres, fixed by the sinus, (*Nephrodium*, Rich. Br.) The first are called *Polystichum* in the Edinburgh Catalogue, while the latter are called *Lastræa*; and in the genus *Asplenium*, as defined in *British Flora*, 2 species (*A. Filix fœmina*, and *A. fontanum*,) are, in the Edinb. Cat., called *Athyrium*. *Cryptogramma* of Brown and Hook. is called *Allosorus* in the Ed. Cat.; *Blechnum boreale*, Sw. is called *Lomaria Spicant*, and *Trichomanes brevisetum*, Br. and Hook. is the *T. speciosum* in Ed. Cat. Now the whole of these changes (we are not discussing the merits or correctness of the names) no more originated with Mr. Newman, they are no more his original "nomenclature," which is declared "to be *toto cælo* at variance with that so long in use," than they did with the authors of the Edinburgh Catalogue. The genus *Polystichum* was invented by Roth in the year 1800, and is absolutely identical with *Aspidium*, as it stands in the British Flora! including both *Polystichum* and *Lastræa* of the Edinburgh Catalogue. *Lastræ* originated in M. Bory de St. Vincent in 1824, and was formed to include the *Polypodia! Oreopteris, Thelypteris* and *unitum*. Presl in 1836 altered the character, to make it comprise certain Aspidiaceous plants, banished *all* Bory's species, and was the author of the names of the *Lastræa* as they stand in the Edinb. Cat. *Athyrium* also is a genus of Roth, (1800), (adopted in part by Presl), and the species above mentioned are of the same antiquity. We are well aware that *Cryptogramma crispa*, Br. is the *Allosorus* of Bernhardi, (1806); but the *Cheilanthes odora*, Sw. is the plant which Bernhardi seems to have had in view in constituting that genus; and Presl has not improved the genus by the heterogeneous species he has mixed up with it, and which have little in common with the plant in question. So long ago as 1810, Mr. Brown expressed his opinion that *Blechnum boreale* might perhaps be referred to his *Stegania* (*Lomaria*, Willd.); and in 1811, Desvaux named it *Lomaria Spicant*. Our view of the fructification differs from that of these authors, and we have not preserved the name of Swartz without stating reasons for it, and giving a figure have been found in Britain, and to avoid the more prominent inconveniences of the Edinburgh Catalogue. The Natural System is here employed in place of the alphabetical

which in our mind, at least, confirms those views, (see Brit. Fl. ed. 5, Tab. X. f. 10.) With regard to Mr. Brown's name of *Trichomanes brevisetum*, we may here extract what is but just printed respecting it in the "*Species Filicum*," p. 126, where the author expresses his regret that he was under the necessity of occupying so much space in his attempt to unravel the difficulties which have always attended the synonomy of this plant, and respecting which Sir Jas. E. Smith (whose writings on the Ferns the reviewer, in the "Phytologist," treats with marked contempt), said, nearly thirty years ago, that "few plants of almost any country have caused more enquiry, or more diversity of opinion, than this Fern." Unquestionably the *T. speciosum* of Willd. is the same species as our *T. brevisetum*, though a native of Teneriffe; and, as such, the name has the right of priority over that of Mr. Brown: but after a most careful investigation of other specimens of *Trichomanes*, and especially the *T. radicans* of Swartz, from Jamaica, we must declare ourselves at issue with the reviewer in question, who, notwithstanding that "Mr. J. Smith had labelled a var. of the Irish *T. speciosum*, lately discovered by Mr. Andrews, as *T. radicans*, Sw.;" nevertheless "thinks Mr. Newman has exercised a sound discretion in keeping the name of *T. radicans* quite out of view." The author of the "*Species Filicum*" has come to a different conclusion, and having satisfied himself of their identity, ventures to retain the name of *radicans*. It might be supposed the reviewer was of the same mind when he says, (Phytol. p. 956), "it was held to be impossible that a *tropical* plant should exist in Ireland." He surely does not take Teneriffe and Madeira, the recorded habitats of *T. speciosum*, to be within the tropics. Let it be observed that Mr. Newman gives no authority for the genera *Polystichum* and *Lastræa* in his Synoptical Table of British Ferns, p. 6, but he informs us (p. 8) that these "have not been employed by any previous writer on the British Ferns."

One word on another remarkable passage of the reviewer, who pronounces Mr. J. Smith's Arrangement of the genera of Ferns as "perhaps the most profound and useful treatise ever presented to the Linnæan Society." Knowing, as the Editor of this Journal does, the character of Mr. J. Smith, and his love of truth, he hesitates not to say that such an overstrained compliment will be far from gratifying to him. Of the merits of his Memoir, the Editor entertains a very high opinion, and of his judgment in discriminating types of genera or sub-genera, and it has been held a privilege to afford publicity to that very paper in the pages of this work; and further, to give figures of Mr. Smith's new genera (see "*Genera Filicum*," passim): but great as is his merit in the "Arrangement," now arrangement. The older and better known names are restored to many of the plants; and though no single work is followed in this respect, the nomenclature is generally the same as that of the British Flora. The general list includes only native and naturalized plants; the latter being distinguished by a different type. A separate list is appended, including upwards of a hundred "excluded species," being those "not recently found in the localities indicated for them, erroneously introduced into lists of native plants, or not sufficiently naturalized."

Differences of opinion will doubtless be entertained about the correct allocation of certain plants among the native, the naturalized, or the excluded; but there is an obvious convenience in making such distinctions. Still more diversity of opinion may be anticipated in regard to the limits drawn between species and varieties; many appearing only as varieties in the London Catalogue, which have been described as species by authors. Here the discrepancies between the Catalogues of the two Societies, those of Edinburgh and London, are very wide. The species of the Edinburgh Catalogue exceed those of the London Catalogue by one hundred and ten; but as a set-off against this, we find the latter enumerating nearly five hundred named varieties, more than double the number of varieties included in the Edin-

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mentioned, it rises much higher in our esteem on account of the *candour* with which he speaks of his predecessor in the same line; and it detracts nothing from Mr. Smith's merit that Presl was his predecessor in these innovations, for the two writers worked wholly independently of each other. "I had nearly," says Mr. J. Smith, "completed my arrangement, when I received a copy of Presl's 'Tentamen Pteridographiæ,' a work published at Prague in 1836, but not seen by me till 1838. That author's opinions so nearly coincided with mine, that it might seem as if a communication of ideas had passed between us; but, after allowing him due credit for his labours, I must still continue to differ from him in a number of important points; yet in order to avoid adding synonymous generic names, I have revised my original ones, and in all cases, where Presl's character of his genera are conformable to my view, I have adopted his names."

burgh Catalogue. The number of species and varieties is thus summed up in the London Catalogue:

Indigenous species . . .	1305
Naturalized species . . .	132
Excluded species . . .	102
Varieties	495
	2034

Probably the most useful and novel feature of the London Catalogue, both to collectors of specimens and to botanists who study the geographical peculiarities of plants, will be found in its indications of the rarity or frequency of the several species. This is done by a scale of twenty figures, denoting the number of local floras for small tracts of Britain, in which each species respectively is included. Although this test may not prove exact in every instance, yet, as a general rule, we may conclude that the more common a species is, the more of such local works will it be included in. Through means of this scale of prevalence, assisted by the distinctions made between the truly and doubtfully British plants, the Catalogue is rendered a complete statistical summary of the Vascular plants of Britain, in addition to its more immediate purpose for facilitating exchanges of specimens.

Although no name is given on the cover of this "Catalogue," we think we discover the masterly hand of Mr. Hewett Watson, to whom British Botany is much indebted for the state of perfection to which it has arrived; for the care with which he has studied our plants in their native wilds and in cultivation, so as to determine more accurately the limits of species; for the ability he has employed in clearing up doubtful synonymes, retaining or rejecting dubious species; and above all for his writings on the geographical distribution of British plants, which have stamped his name among the first in this interesting branch of science.

The Catalogue (defaced perhaps by a few typographical inaccuracies, chiefly in the omission of single letters from words; and, as authors, we cannot but think leniently of such errors) may be had in the form of a pamphlet of sixteen pages, or occupying one side of a large sheet; so that all the Orders, Genera and Species may be seen at a glance. Such an undertaking cannot but assist materially all those who study our native plants, and we shall be surprized if it does not obtain the circulation it so well deserves.

Flora of the SHETLAND ISLES.

Mr. Thomas Edmondston, Jun., a most zealous Botanist, of Baltasound, Shetland, and the son of an accomplished Physician, and Naturalist, of that country, has announced a Flora of this Ultima Thule of the British possessions, comprising a "Topographical distribution of the plants; description of the country; the geological and geographical distribution of the plants; comparative lists; a full catalogue of the flowering and cryptogamic plants of Shetland; their vernacular names; habitats of the less frequent species, and occasional remarks on their domestic or medicinal uses; and critical affinities."

Mr. Edmondston made himself known at a very early age, by his discovery of *Arenaria Norvegica* in Shetland, an entirely new plant to Britain; also by drawing up a Catalogue of the Plants of the Island of Unst, Shetland, when he was only eleven years of age, and which was printed in the late Dr. W. D. Hooker's "Notes on Norway."

VEGETABLE ORGANOGRAPHY, *or an Analytical Description of the Organs of Plants, by* M. AUG. P. DE CANDOLLE; *translated by* BOUGHTON KINGDON. Ed. 2, 8vo. 2 vols. *with* 25 *lithographic plates.*

Although printed three years ago (1841), this second edition of De Candolle's "*Vegetable Organography*," translated by Mr. Boughton Kingdon, has only now fallen into our hands, otherwise we should ere this have noticed it in our Journal. We now do so with much commendation, as a faithful translation of one of the most important of the many valuable works of the distinguished author: and we are therefore glad it is made so generally accessible to the English reader. The plates too are well executed, in lithography, and are accurate copies from the original ones.

NOVARUM ET MINUS COGNITARUM STIRPIUM PUGILLUS OCTAVUS. J. C. LEHMANN. 4to.

This is the 8th Part of a series of descriptions of new and rare plants (by the bye, we regret to learn that the copies of the first seven were destroyed by the great fire at Hamburgh), from the pen of Lehmann. They have been distinguished for the accurate descriptions, among other plants, of a great number of *Hepaticæ*, especially of *Jungermanniæ*; and these are continued in the present "Pugillus." There are besides, in this Part, under the head of "Novitiæ Floræ Novæ Hollandiæ," several new genera and Species from the Swan River Herbarium of Preiss, among which are nine *Droseras*, some of which, we think, will be found described in Dr. Lindley's "Swan River Botany;" a work, which from not being ever mentioned by our author, we fear is not known to him.

SYNOPSIS HEPATICARUM.

We have before us a few pages and preface of a new work, bearing the above title, and which, if it may be judged from the preface, is mainly from the able pen of Dr. and Professor Nees von Esenbeck. We shall rejoice to see the continuation of it.

PLANTARUM VASCULARUM GENERA *eorumque Characteres et Affinitates tabulis diagnosticis exposita et secundum ordines naturales digesta ; auctore* C. F. MEISNER, M.D.—*Accedit* COMMENTARIUS *exhibens præter adnotationes atque explicationes varias Generum synonyma et indicationem librorum in quibus descriptiones fusiores iconesque necnon specierum novarum diagnoses etc. inveniuntur.* 1 vol. fol. Basle.

This excellent book, which was commenced in 1836, is now finished, and the botanical world is greatly indebted to its talented author for having arranged all the known genera according to their natural affinities, in a tabular form, similar to what has been done by Mr. Brown on *Asclepiadeæ,* by Adr. de Jussieu on *Rutaceæ,* and Martius on *Amaranthaceæ.* The above title amply explains the nature of the work, and the various parts have been so long and justly estimated by the public, that it needs no further commendations on our part. But we heartily congratulate the author on his having brought this valuable and laborious task to a conclusion. The remarks in the "Commentarius" are peculiarly important.

Verhandelingen over de NATURLIJKE GESCHIEDENIS DER NEDERLANDSCHE *overzeesche bezittingen, door de Leden der Naturkundige commissie in oost-Indië en andere schrijvers.* BOTANIC ; *by* P. W. KORTHALS, fol. 70 *coloured plates.*

This beautiful work, being mostly in Dutch, the historical part of it is, we regret to say, very much a sealed book to us : but the generic and specific distinctions and sometimes the descriptions are in Latin, and the plates are so beautiful and satisfactory as fully to explain themselves as to structural characters. It would seem to be the *botanical* portion of a work on the Natural History of the Dutch East Indian possessions: in which certain orders or genera, remarkable for their beauty or structure, or some interesting circumstance, only appear to be described. Thus we have: 1. a Memoir on 9 species of the curious genus *Nepenthes*, with many admirably illustrative figures (similar illustrations accompany the rest of the Memoirs). 2. On *Dipterocarpeæ* (one species, the *Dryobalanops Camphoræ*, yields the famous and costly camphor of Sumatra). 3. On *Bauhinia*. 4. On *Ternstrœmiaceæ*. 5. On *Nauclea* and its allies, (one of which, *Uncaria Gambir*, produces the *gambir* or *gambeer* of commerce). 6. On *Cratoxylon* and *Tridesmis*. 7. On *Salacia* and *Hippocratea*. 8. On *Paravinia* and *Omphocarpus*; two new genera, the former belonging to *Rubiaceæ*, the latter allied to *Grewia* and *Microcos*. 9. On the *Oaks* of the Indian Archipelago; (and some remarkable ones are figured and described). 10. On *Indian Melastomaceæ*, with very numerous figures; and 11. On *Cleisocratera* (a new genus of *Rubiaceæ*); *Boschia*, (ditto of *Sterculiaceæ*), and *Maranthes*, Bl. The general style of the work is similar to that of Blume's "*Flora Javæ*" and "*Rumfia*," and no way inferior to them in point of execution; it appears to be closed with the last number of the volume, and very useful it will be to those who study the Botany of the Malay Archipelago.

Systema MATERIÆ MEDICÆ VEGETABILIS BRASILIENSIS, *composuit* CAR. FRID. PHIL. DE MARTIUS. Leipsic, 1843, 8vo.

This is, strictly speaking, a medical book; but coming from the pen of so distinguished a Botanist as Dr. von Martius, it deserves a notice in this place. It is indeed a most valuable history of all that is known of the medical properties of the plants of Brazil, arranged under the following heads. Classis I. *Amylacea*. II. *Mucilaginosa*. III. *Pingui-oleosa*. IV. *Saccharina*. V. *Acida*. VI. *Amara*. VII. *Adstringentia*. VIII. *Acria*. IX. *Æthereo-oleosa*. X.

Resinosa et *Balsamica.* XI. *Narcotica.* Appendix, *Tingentia.* A "Tabula concors Plantarum quæ usu medico nuncupantur in Europa et in Brasilia," is appended; and it surprizes an European to see how many Brazilian plants are employed as substitutes for vegetable substances long used in the Old World. The work must be a highly important one to every medical student. We find the same use made of the Papaw tree (*Carica Papaya*) in Brazil, for which it has been celebrated in the West Indies; the leaves are employed to make old and tough meat tender, "quam ob causam vidi aviculas e. g. psittacos, priusquam coquo traderentur, in Papayæ folia involutas." Martius observes that a similar property is attributed to the Wallnut (*Juglans regia*) in Europe.

Herbarium of M. Delessert.

M. Lasègue, Curator of the Herbarium of M. Benjamin Delessert at Paris, is preparing a detailed notice of the rich botanical collections which it embraces, which cannot fail to be of considerable interest to the scientific world, containing, as it does, such a number of authentic plants from various sources. There will also be given some remarks on the Herbaria appertaining to the principal public establishments of Europe, as well as the more extensive ones which belong to private Botanists.

HERBARIUM OF THE DUBLIN COLLEGE.

It is perhaps not universally known that the late Dr. Coulter, a pupil of De Candolle's, who distinguished himself in his early career as the author of an excellent dissertation on *Dipsaceæ*, in 1823, and afterwards by his travels and collections made in Mexico and California, held the appointment of Curator to the Herbarium above-mentioned in Trinity College, Dublin, for some years previous to hi death, which event occurred last year. It will interest all lovers of Botany to know that Mr. Harvey, the able author of the "Genera of South African Plants," and of many writings on *Algæ* (in which department of Botany he unquestionably holds the first rank), has recently been appointed his successor: and we are sure, if properly supported by funds from the college, and with his facilities of making exchanges, he will soon raise the value of the collection, so as to entitle it to a name among the most useful of European Herbaria, and to a place in some future edition of the work mentioned in our last article.

Extracts from letters of MR. JAS. DRUMMOND, *relating to* SWAN RIVER BOTANY.

Hawthornden Farm, Toodjay Valley,
Sept. 1842.

In an account which I *lately* sent you, of a journey to the south of the Vasse River, you may remember my mentioning a tract of grassy country which was discovered by us about fifty miles north of this place. My sons have now two stations for their sheep there, and being told by the natives of a river and lakes of water two days' journey farther north, they determined to explore the country in that direction, and set off to do so, accompanied by Capt. Scully, the Government-Resident of this district. Some gentlemen, among whom was Mr. Gilbert, the Ornithologist, (I have formerly mentioned him to you, he has lately come out again to Swan River), intended to have joined the exploring party. They, however, arrived too late, as was the case with myself, so that my remarks must chiefly be confined to what fell under my own and Mr. G's observation.

We left Hawthornden on the 22nd of August, and travelled about twelve miles to Captain Scully's residence, and on the following day accomplished five or six miles more in a northerly line, examining on our way some large masses of granite rocks covering several acres, where, in pools of rain-water among the hollows, Mr. Gilbert discovered a small but curious fresh-water *shell.* I gathered a small species of *Stylidium* and a remarkable diœcious shrub with pinnate leaves, also new to me. The beautiful lace-like kind of *Reindeer moss* grows plentifully on these rocks, (*Cenomyce retipora,* Hook. Lond. Journ. of Bot. vol. I. TAB. X.)

At the distance of about ten or a dozen miles from Captain Scully's residence we reached a permanent spring, called *Yoolgan* by the natives, where there is excellent grass, of which we took advantage for the horses, while we halted and refreshed ourselves. On pursuing our journey, we found the way, as far as the Moore River, distinctly tracked by the carts and horses of my son's party, which had preceded us. Soon after leaving the spring we met two gentlemen, returning, for they had been a day too late to join the others, so we knew it was useless for us, still farther behind, to hurry forward. Ten or twelve miles farther, we came to a Tea-tree swamp, called *Yeinart,* where good grass and water are to be found all the year round, and here we encamped for the night. Rain came on, but, fortunately, not heavy till daylight, for we had been too tired to do much in the house-building way in the evening, but the weather becoming decidedly wet, we quickly erected a shelter, which we covered with *Tea-tree* bark and rendered it waterproof, for nothing can be accomplished in collecting during rain, and provisions are sure to be spoiled by exposure to it. In the afternoon we visited a swamp, where one of my sons had shot several specimens of a small and beautiful *Kangaroo,* the native *Marmine*; its fur is dark and tipped with longer silvery hairs. We saw plenty of its marks, but could not detect a single animal. On the top of a hill grew two very distinct species of *Dryandra,* new to me. The first, (No. 41 of my collection), has acerose leaves about ¾ of an inch long, and generally undivided, but in young and luxuriant plants they sometimes have one or two recurved teeth. This shrub generally grows 2 or 3 feet high; its many branches forming a sort of level top. The flowers, though much advanced, were not fully expanded; they were each surrounded by a handsome circle of leaves and many narrow ciliated scales, and I observed small tufts of these same scales in the axils of the flowering branches. The second species is equally distinct, it grows in large patches, and apparently creeps at the roots, throwing up several branches two or three feet high, which do not divide again, except to produce flowers, these are often borne close to the ground, and in circles all the way up the stem, at the distance of eight or nine inches from each other. The foliage is circinnate, rigid and glaucous, beautifully reticulated above and somewhat ferruginous beneath, each leaf six or eight inches long, linear, strongly serrated for about two thirds of its length, but without teeth near to the stem, where it is ciliated and hairy, this portion being permanent, and remaining on the plant as long as it lives. The flowers of this species, judging from the old ones which I saw, are small, closely enveloped in numerous ciliated downy scales, with a chaffy receptacle, but apparently destitute of woody filaments. In both these species of *Dryandra,* the seeds are furnished with a woody dissepiment.

On the same hill I gathered the beautiful and curious *Eucalyptus,* (No. 49), of which I sent you seed-vessels and flowers; the inflorescence is rose-coloured, and as large as that of *E. macrocarpa*; still it is readily distinguishable, as a species, by its less glaucous and petiolated leaves, with the lengthened recurved footstalks of the blossoms and fruit; but I find that the winged seed-vessels and twin-growth of the flowers do not afford dependable characters.

We returned to Yeinart, and slept in our *Yumback* house, and the next day proceeded northerly on our journey. Soon after starting, we came to two *Acacias* that I had not met with before: one is strikingly beautiful, but very thorny, (No. 85), its stems elegantly striped with alternate green and glaucous lines, all the branches terminating in thorns and likewise armed with thorns, standing out at right angles, so as almost to render any touching of the plant impossible. The second, (No. 84), is thornless, and about two feet high, it has short truncated leaves and sulphur-coloured flowers.

We mistook our road, and found ourselves at our old station of *Badgee-Badgee.* On the way, I picked up a *Leguminous* plant, (No. 80), apparently of a genus that had not come under my notice; the leaves are narrow, lanceolate, and terminating in a prickly point, each furnished with two strong decurved prickles, which seem to serve as stipules; the flowers are large and showy, but I looked in vain for seed-vessels. We had stopped to dine and feed our horses at Badgee-Badgee, and in some pools of water among the rocks I gathered several curious aquatic plants; one resembling a *Zostera,* the male flowers borne in the axils of the lower leaves, and the female ones on elongated footstalks springing from the axils of the upper leaves. There was a plant with leaves floating on the surface of the water, like a *Callitriche,* (99), and a blue-flowered *creeper,* (101), apparently belonging to the genus *Elatine.* From this place it was very difficult to trace our road to our new station on the *Mouran Pool,* the cart-marks being almost obliterated by the trampling of sheep. On our arrival there, we ascertained that the exploring party had returned, and that one of my sons and Captain Scully had started on their homeward way only half an hour before we came. The mutilated specimens of some plants which my sons had brought, together with a report of others which had been forgotten and left behind at one of the bivouacking places, stimulated my curiosity so much that I decided on visiting the newly-discovered river myself. We stopped, however, one day at Mouran Pool, examining the hills in the vicinity, where grew a fine glaucous-leaved species of *Anadenia,* whose abrupt foliage ends in teeth of very various breadth.

A kind of *Rat,* very like the Norway rat, but smaller, inhabits this part of the colony, and commits great ravages among provisions, by getting into the huts, and gnawing holes in the bags of flour, &c. My youngest son and Mr. Gilbert succeeded in catching seven or eight of these animals in a common rat-trap baited with bread-and-butter. Mr. Gilbert obtained specimens of several small animals, about the size of rats and mice, which were brought in by our shepherds and by the natives. There appear to be many nondescript creatures of that kind here, some bearing their young, to the number of eight or ten, on the outside, like the *Wombat*, and others in the same way as the rat of our country, making nests in the ground, where they deposit their progeny.

On the 27th, having procured two natives to accompany us, one of whom, named Cabbinger, had been with the party to the new river, we started; but as the day was rather advanced ere all our preparations were complete, we travelled only ten miles, and slept at a place called *Boorbarna*. I found a *leguminous* plant new to me, and apparently belonging to the same genus which is so fatal to sheep and cattle;* also a fine *Conospermum* with filiform leaves, growing close to the ground, and long panicles of blue flowers, varying to white. A *Grevillea*, with scarlet flowers, (30), supposed to be an undescribed species by my sons, seems to me though much larger, scarcely distinct from one which I sent in my last collection. On the top of a stony hill, north of the spring, grew an interesting plant, belonging to *Scrophularineæ*, (66), with much affinity in its habit and foliage to the common *Horehound*; the leaves are smaller, and the flowers are scarlet tubes about an inch long. I gathered a species of *Manglesia*, allied to *M. tridentifera*, from which it differs by the more divided leaves and creeping roots, the plant only attains a height of two or three feet; whereas the *M. tridentifera*, (*Grevillea Drummondii* of Preiss, who so named it from a specimen he saw in Baron Ludwig's garden at the Cape, when he was coming out to Swan River), is as large as a middling-sized Hawthorn, with no tendency to creep at the roots. It is now in full flower on all the grassy districts, and is called by our settlers "*the Swan River Hawthorn*," its numerous snow-white blossoms conveying, as seen in the distance, a reminding resemblance to the favourite English Hawthorn. A lovely creeper, a species of *Pronaya,* was running over the bushes at the top of this hill, but though more luxuriant, I hardly consider it distinct from a species I formerly sent home.

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* See p. 630, vol. 1, of this Journal.

On the 28th, soon after setting off on our journey, I met with two splendid plants, belonging to *Compositæ* and the tribe of *Everlastings.* One has beautiful golden yellow flowers, in heads, little resembling any genus with which I am acquainted in this extensive family, it also occurred with white flowers; the other other bears blossoms of a lovely pink, and has lanceolate leaves, growing about two feet high, and bearing a general similarity to *Rhodanthe Manglesii,* or *Lawrencella rosea,* but if possible, finer than either. I cannot doubt that when these two plants become known in England, they will gain equal favour with any of the annuals now in cultivation.

Ten or twelve miles from our sleeping-place, we reached a curious kind of country, covered with what my sons had imagined to be flint; but as this mineral is unknown in a primitive country, I concluded it to be a variety of quartz: it breaks with a conchoidal fracture, and exhibits much similarity to flint. In many places the pieces are large and sharp angled, which was supposed to be the cause of our horses' feet becoming sore; but when we alighted and led the animals over the worst places, they did not appear to be inconvenienced by these stones. This remarkable district produces many fine plants, a *Calothamnus,* (54), with filiform leaves, nine inches in length, and large showy scarlet inflorescence, now in perfection; a dark red *Drosera,* of which the calyx is wider than the corolla; this was apparently very rare, though I have seen it before; and another species, allied to *stolonifera,* (112), probably new. My sons had seen here a *Banksia,* resembling *Aquifolium,* which they thought new, and yet had unfortunately secured no specimens, and I sought for it in vain.

Before reaching the river, we passed over an extensive flat of stony clay land, covered with *Eucalyptus* and some remarkable species of *Acacia*, and about two miles from the main branch of the river, came to a considerable brook, running strong to the west. Here we stopped to refresh ourselves and our horses, at a spot called *Murarine* by the natives, and I was struck by a splendid plant, which my sons had described to me and they supposed it to be a *Lasiopetalum*, while to me it looked more like the genus *Solanum*, though I have never seen the fruit, which they tell me is a four-celled capsule. The flowers measure an inch and a half across, and are of a beautiful purple, and the calyx, which is smaller than the corolla, partakes of the same hue, resembling velvet in texture. The leaves are acuminate and more than an inch wide at the broadest part, covered, especially the young ones, with rusty down; the blossoms are produced singly near the ends of the branches, and the whole plant grows from one to three feet high, and has stems armed with slender thorns. Whatever be its genus, this is one of the handsomest productions of Australia.

About four miles north of the river, we came to two lakes, called *Maradine* and *Dalarn* by the Aborigines, and between these we fixed our encampment. Thousands of *Ducks* were swimming on the water, and such numbers of the *Water-Hen*, which once visited Swan River, that Mr. Gilbert killed three or four at a single shot. The large *white-necked Crane* was also abundant here, but we only saw a single pair of *Black Swans*. A species of *Coot*, with a bald face, resembling the European *bald-faced Coot*, inhabits these lakes, and also the lakes nearer Perth. A species of *Hakea*, (18), with very narrow foliage and boat-shaped seed-vessels, is found in this district, but I doubt of its specific distinctness from one that occurs near Guildford. Near the lakes grew an annual, apparently belonging to *Compositæ*, with oval leaves, and a beautiful *Bæckea*, attaining a height of twelve to fifteen feet, which I had never seen before.

On the 29th we returned about six or seven miles on our tracks, and then ascended the brook which I have mentioned as pursuing a westerly course. Our route lay south-east;

soon after quitting our old line, we entered on a grassy country, and stopped to dine three or four miles up the brook, and while thus engaged, a pair of beautiful falcons, the *Falco hypoleucus* of Gould's *Australian Birds,* were observed hovering over us, and Mr. Gilbert succeeded in shooting one of them. Proceeding in the same direction for about ten miles, we crossed, at a place called *Mugadrine* by the natives, the tracks of my sons and of Captain Scully. They had gone about ten miles up the main branch of the river, but had seen little grass on its banks; in proceeding, however from thence to our station on the Moore River, they had passed over an extensive portion of grassy land. After quitting their traces, we pursued the same course for six or eight miles, which led us to a charming grass-clothed country, where we met with a large tribe of Aborigines, many of whom had never seen a white man, but were very friendly. They made so much noise in testifying their surprize at beholding such a strangely-coloured variety of their own species as ourselves, that we tried to remove to some distance, in hopes of obtaining a quiet night; but all in vain, they chose to follow us. Many of the single men slept by our fire, the married ones retiring a little. Our guide, Cabbinger, recognized among this party, a young girl, ten or twelve years old, whom her parents had destined, from her birth, to become one of his wives, and he introduced her to us with a vast deal of ceremony. The poor child was very bashful, but after much persuasion, was induced to come to our fire, where she took care to keep Cabbinger between herself and the white men. We gave her some tea, well sweetened with plenty of sugar, and her future husband assured her that this should be her constant beverage when she was old enough to leave her mother and come to live with him and the white people.

On the 30th, at daylight, we proceeded to the top of a hill near our sleeping-place, called *Margion* by the natives, whence, far as the eye could reach, a splendid grassy country stretched in every direction. Our guides had promised to lead us to a hill inhabited by a species of *Kangaroo*, to which the Swan River people give the name of *Damer*, and of which my sons had shot several about a day's journey east of our station on the Moore River; but on arriving at this place, they declared our supply of flour to be altogether inadequate, and stated their intention of returning straight to the Moore River, so being unable to help ourselves, we were reluctantly obliged to yield. For almost the whole day, the same fine country was around us, intersected by streams of running water, and bounded by hills equally clad with grass, where also grew the lovely yellow-flowered *Everlasting*, already described, a plant apparently confined to the richest land.

When we had gained the station, a day was devoted to drying the plants we had collected. One of my sons brought me the foliage of that *Anigozanthus*, (97), of which I formerly sent you the flowers; the leaves are a foot long, covered with clusters of white hairs, and afford a distinct character from *A. flavida*, the only described species that resembles it. He also pointed out, on an adjacent hill, a splendid new *Dryandra*, (42), called by me, in allusion to its profusion of bloom, *D. floribunda;* it grows nearly fifteen feet high, with very narrow smooth leaves, and small golden yellow flowers, so abundant as almost to hide the foliage of the plant. I have only seen it on one hill, where it occurs in such quantities, that from a distance of some miles, the colour is as plainly descried as Furze or Broom on a hill-side in Scotland. A small annual *Lepidium*, (103), and a glaucous *Acacia*, (82), allied to the native *Mauna*, were in blossom in the same habitat.

We reached the Moore River by the way we had before travelled, and I only observed one new *Acacia*, (83), with curious triangular stems and subulate recurved leaves, forming thick bushes two or three feet high. Near the residence of Mr. Phillips, grows a second indigenous kind of *Dock*; it has long and narrow broadly-auricled leaves, while in the other native species the foliage resembles that of the *English Fiddle-Dock.* Of this pernicious genus of weeds, several foreign individuals are now naturalized here.

P.S.—From the aspect of the Lakes *Dalarn* and *Maradine,* and of the plants inhabiting their vicinity, among which I noticed several, as the *Red* and *Yellow Leschenaultia,* which are confined to the coast, I conclude that these lakes are near the sea, and that the Darling range of hills, hitherto supposed to terminate in Morseby's Flat-topped range, do not extend so far to the north as these lakes, which cannot be more than one hundred miles north of Freemantle. Some natives, whom my sons saw near this piece of water, informed them that by travelling westerly, the sea-shore would be reached long before sunset. I do not know, at this moment, how the coast trends to the north of Freemantle. Our course, by compass, had been from Hawthornden several points to the west of north, and Hawthornden lies from Perth north-east by north, nearly fifty miles.

JAS. DRUMMOND.

Hawthornden, Farm, Toodjay Valley.
Oct. 1842.

A month ago I wrote to you a long letter, containing a kind of Journal of an Excursion I had made to the north, in company with Mr. Gilbert. Since that time, I have taken another journey, of about fifty miles, in an easterly direction, and have put up a box, containing one hundred and thirty species of plants, to be forwarded by the first ship for England: but I fear the despatch of it must be deferred till I return from an expedition on which I am going, accompanied by Mr. Gilbert, and which will take me towards King George's Sound, and perhaps keep me absent till near the beginning of next March. The box is chiefly filled with the produce of what I saw during my two last journeys. No. 9, is that remarkable pear-shaped *Hakea* figured in your *Icones Plantarum,* TAB. CDXXXIII, in flower. It was plentiful in one spot about thirty-six miles to the north-east; with it grew the two *Grevilleas*, (Nos. 21, and 26). No. 28, is distinguished by its strong smell of *woodruff* when drying. But No. 23 is one of the most striking *proteaceous plants* I have met with: it grows nearly fifteen feet high, and produces most beautiful foliage, resembling *Franklandia fucifolia*, and flowers of a deep rose colour, inclining to crimson, which terminate the branches with their lovely spikes, four inches long: the seed-vessels, which are somewhat like those of a *Grevillea*, have from one to three peculiar, large, eye-like glands: there appears to exist some connexion between these glands and the young embryos, but for what purpose I am unable to determine. No. 37 seems to me to form, in connexion with the heterophyllous, striated-leaved, *Grevillea*-like plant of which an account is published in a late number of the *Journal of Botany*, a new genus, distinguished from *Grevillea* by the long narrow neck to the capsules and the short regularly divided corolla. The leaves on the narrow branches of this second species are ovate, and those on the flowering branches obcordate; both species coincide in their upright habit and naked compound spikes of inflorescence. Nos. 33 and 35 are splendid *Conospermas*; 50 and 51, beautiful crimson and yellow-flowered *Eucalypti*; 52 is a *Calothamnus*, attaining the size of a small tree, and highly ornamental; 53 belongs to the same genus.

I have just put corresponding numbers over the most remarkable plants, noticed in a journal of the first excursion to the north, which you will find enclosed in the box with the specimens. No. 47 is an undescribed *Dryandra*, distinguished by its glaucous powdery foliage. I perceive that the name I had given to 42 is pre-occupied. Nos. 43 and 44 are closely allied, the principal difference lying in the form of the leaves; their habit and place of growth are alike, they are found in the same situations, on the top of ironstone hills; I have sent both to you before, but without flowers; the first (43) seems only to occur near the Moore River.

No. 130 is a most peculiar plant; its two seeds unite in the middle, where they are attached to the parent plant, and when they drop off in pairs, they present a striking resemblance to an axle-tree, with two wheels. No. 106 is very curious, being a small and succulent tetrandrous plant, covering acres of the bottom of salt lakes when the water dries up. No. 114 resembles a small *Myosotis*, and has prickly seed-vessels. I am unable to ascertain its genus.

The extent of our journey to the north-east was about fifty miles, we visited a hill, called by the Aborigines, *Wangan Catta*, one of the principal objects of my son and of Mr. Gilbert, who went with us, being to obtain the eggs and see the nest of an extraordinary *Gallinaceous bird* which breeds there. The natives give it the name of *Knau*; it raises large mounds of gravel, earth, ironstone and vegetable matter, wherein it deposits eggs, and leaves them to be hatched by the heat generated in the fermentation of the vegetable matter which the birds collect. We found four recent nests, but only procured five eggs, the season being rather too early. The bird is the size of domestic fowl, but its eggs are extremely large in proportion, weighing about half-a-pound each: it would be most desirable to introduce this creature into England.

The *Hakea*, (No. 13), is very striking, it forms dense bushes, three or four feet high, and its strong coriaceous prickly leaves and branches are so closely set, all round, that scarcely any thing can penetrate them: this species abounds in open flats, near the bed of a sort of brackish river, which, even at this early season of the year, is quite dried up in this inhospitable country.

In the box you will find two or three curious *Fungi*; one of them, found by my daughter, spreads by spawn underground like the common *Mushroom*. In a full-grown state, it is about the size of a musket-ball and quite round, when the sort of outer covering with which it is furnished, expands into ten or more very elegantly formed teeth, which, as they open, throw the plant above the surface of the ground; there is an inner covering to the seed, and this, in the species found by my daughter, is beautifully marked with teeth, similar in appearance to the peristome of a *Moss*. Another kind, also in the box, differs in wanting the impressions of teeth; and another, larger, is altogether destitute of the covering or envelope to the seeds. I send a single specimen of a peculiar fungus, which looks as if covered with brown sand-paper; I had given you some account of it in a former letter; the ignorant people of the country call it a Kangaroo's egg, and when they can detect one, always send it home as a vast curiosity.

There are five sorts of small animals, like rats and mice, in the box, and two specimens, (a pair), of the native Wombats.

Perth, Western Australia,
January, 1843.

Some months ago, I informed you of my intention to set off on an exploring journey, to the hilly country lying between the Beaufort River and King George's Sound. In the accomplishment of this object, I was joined by Mr. Gilbert; we wished to cross the country from the mouth of the Blackwood to Mount Parker, taking Mounts Roe and Mitchell on our way; but our intention was defeated by the impossibility of getting over the Scot River and the swampy district in which it rises, when travelling with pack-horses. Nevertheless I was fortunate in procuring plants, and shall be able to transmit five hundred species, none of which were in the collection sent home by the "Shepherd," which I hope has arrived ere now in good order.

We visited Mount William on our way to the south, and I had hoped to obtain some interesting species of *Mosses* there; but I am sorry to say that I am much disappointed in this mountain, which, instead of having an elevation of

3,600 feet, as stated in the recent map by Arrowsmith, only rises to 1,630. I had indeed been convinced from the aspect of plants gathered there, that the height of Mount William was over-estimated, and on enquiry of Mr. Roe, the Surveyor-General, that gentleman showed me the measurement lately taken by Captain Stokes of the "Beagle," who makes it only 1,630 feet. On our journey we gathered some good plants, between the gorge of the Murray River and Mount William. A *Dryandra*, with the foliage very similar to the *Luccombe Oak*, might be appropriately called *D. quercifolia*. There were several beautiful *Leguminosæ*, one of the finest among them, a *Sphærolobium*, has large crimson flowers.

We crossed eight or nine running streams between the Murray and Mount William, several so broad that we were obliged to unload the pack-horses to get them over. The very summit of Mount William is covered with large *Mahogany* and *Red Gum Trees*, and a grove of the common *Xanthorræa*. My *Hovea grandiflora* grows in great plenty and high beauty, on this mountain. I found a curious little *Fern* on the bank of one of the brooks, its barren leaves resembling grass; it is numbered 225 in the box now sent.

Some months ago I made some observations in a letter to you on the country between this place and the Vasse River. I there gathered ripe seeds of *Franklandia fucifolia*; it has a trifid awn-like crown to the seed, four inches long. A beautiful *proteaceous* plant is numbered 5, its long panicles of white flowers vary to rose colour: if it be not a *Symphonema*, it may constitute a new genus. Nos. 8 and 9 are, I suppose, species of *Agastachys*, their seeds being small berries, with a very thin covering; 27 is an arborescent *Lambertia*, and 25 a remarkable *Dryandra*, inhabiting Cape Lewin. There are two species of my *Dasypogon Hookeri* in the box; 31 is a fine *Composite* from the Vasse Inlet, and 37 a beautiful *Calothamnus* from Scot River, the gouty-like swellings on the stem, whence the flowers are produced, often appear several years before the flowers come out.

Boronia Molloyi is also sent, and two remarkable varieties of the same, one with pink or rose-coloured flowers, hairy leaves and an upright mode of growth; the other is drooping, and has smooth foliage and flowers, which sport into endless gradations of deep purple, rose and crimson, and shading off to snow white; occasionally the extremes of deep purple and white being seen on one plant, and even in the same blossom; for instance, half white and half crimson, or snow white just tipped with purple. Few plants will be so much admired in England as my *Boronia Molloyi*, as no person can be more deservedly regretted than the amiable lady whose name it bears.

Nos. 97 and 98 I suppose to be new species of *Roea*; the leafless one, 98, has a curious twisted permanent style. No. 100 belongs to the *Leguminosæ*, and in my opinion constitutes a totally new form of that order, belonging to it in the same way as *Chorilæna* and *Diplolæna* do to *Rutaceæ*. Should it prove a new genus, as I anticipate, I would request that it may be called *Huttia quadriflora*, after our present Governor, who is most kindly willing to promote the views of those Naturalists who desire to explore the colony.

JAS. DRUMMOND.

LITANTHUS, *a new Genus of* ASPHODELEÆ, *from South Africa; by* W. H. HARVEY, ESQ.

(TAB. IX.)

LITANTHUS, *Harv.*

GEN CHAR. *Perianthium* tubulosum cylindricum, limbo erecto, equali, breviter 6-fido. *Stamina* 6, fauci inserta, inclusa; filamenta brevissima. *Ovarium* triloculare, pluri-ovulatum. *Stylus* filiformis; stigma tridentatum. *Capsula* —? —*Herba* Capensis *perpusilla*; *radice bulbosa, foliis* (*ignotis*) *post anthesin evolutis*; *scapo setaceo unifloro, bracteis duabus oppositis membranaceis medio affixis.*

L. pusillus, Harv. (TAB. IX.)
Shady places in the woods by the Zwartkop's River, Uitenhage, Cape of Good Hope. *C. Zeyher.*—Drège, *Herb. Cap. n.* 8514, c.

This is perhaps the smallest individual of the Liliaceous group. The bulb is scarcely larger than a good sized pea. The scape, no thicker than a bristle, and scarcely two inches high, appears before the development of the leaves, and bears a solitary nodding greenish-white flower, little more than a line in length, and a third of a line in diameter, subtended by two minute opposite bracteæ, which are fixed to the scape by their centres, and are free and patent both at base and apex. The flower is succeeded by an erect capsule, but we have not seen it in a ripe state.—As a genus, it will stand near *Uropetalum*, from which it differs in habit and in the form of the corolla.

W. H. H.

FIG. 1, A flower laid open; *magnified.*

Brief description of a new NOTYLIA; *by* W. J. H.

(TAB. X.)

NOTYLIA MULTIFLORA, *Hook.* (not *Lindl.*)

Racemo pendulo multifloro, labello trulliformi ecalloso, sepalis petalisque acutis. (TAB. X.)
HAB. Mexico?

Plantæ epiphytæ, cæspitosæ. *Caulis* subnullus, squamis laxis membranaceis tectus. *Folium* solitarium, oblongum, subcoriaceum, acutiusculum, venis obsoletis. *Pedunculus* radicalis, simplex, racemosus, pendulus. *Racemus* 4-5 uncias longus, multiflorus. *Flores* parvi, albi, sparsim flavo-maculati, basi minute bracteati. *Sepala* lato-lanceolata, patentia, acuta; 2 lateralia fere ad medium connata. *Petala* sepalis conformia, patentia. *Labellum* trulliforme, seu deltoideo-acuminatum, planum, ecallosum, basi breviter unguiculatum.

Columna teres. Anthera ovata, obtuse subacuminata, dorsalis, unilocularis. *Pollinia* duo, ovata, seu potius obovata; caudicula elongata, glandula minuta.

This is believed to be an inhabitant of Mexico, and is drawn from a living plant at Kew, which formed part of the collection of the late Duke of Bedford. Besides the two species of Dr. Lindley in his "Gen. et Spec. Orchid." there are several described by the same author in the Appendices to the Botanical Register; but the present does not appear to accord with any of them.

It was quite by inadvertence that the specific name of *multiflora* was given to this plant by me and written upon the plate: for there is a *Notylia multiflora* of Dr. Lindley in Bot. Reg. sub tab. 930, and kept up in the Gen. et Spec. Orchid. As however that plant is avowedly the *Pleurothallis sagittifera* of Humboldt, and as our species bears more numerous flowers, the prior name of *sagittifera* had better, perhaps, be restored to Dr. Lindley's *N. multiflora*.

Fig. 1, Flower; *f.* 2, front view of the column and lip (the latter forced down); *f.* 3, lateral view of the column and lip; *f.* 4, inner view of the anther-case.—*magnified.*

On a new Genus of FLACOURTIANEÆ, *recently detected by Mr. Purdie in Jamaica; by* W. J. H.

Among several interesting plants, of which dried specimens were sent home from Jamaica by Mr. Purdie, collector for the Royal Botanic Garden of Kew, is the one here represented, and of which I proceed to give a description under the name of *Lunania*, in compliment to Mr. John Lunan,* author of the Flora Jamaicensis. It appears evidently to belong to the family of *Flacourtianeæ*, yet to differ in so many points from any described genus, that I shall not at-

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* *Lununea* of De Candolle, the "Bichy" of the negroes, introduced by them to the West Indies from Guinea, is *Sterculia*.

tempt to offer a comparison: nor indeed do I possess materials sufficient for that purpose. Mr. Purdie speaks of it as a "large forest tree, having a singular appearance."

LUNANIA, *nov. Gen.*

Calyx di sepalus, æstivatione valvatus; sepalis ovato-rotundatis, concavo-ventricosis, membranaceis, patentibus, et, ut videtur, persistentibus. *Corolla* nulla. *Discus* hypogynus staminifer, magnus, basin ovarii cingens, cyathiformis, persistens, 6-dentatus, dentibus acutis cum filamentis alternantibus. *Stamina* 6. *Filamenta* subulata, ad marginem disci inserta, erecta, æqualia. *Antheræ* oblongo-ovatæ, basi affixæ, biloculares, marginem versus longitudinaliter antrorsum dehiscentes. *Pistillum* 1. *Ovarium* ovatum, basi constrictum et quasi brevissime stipitatum, uniloculare, placentis tribus parietalibus ovuliferis; ovulis numerosis. *Stylus* brevis, crassiusculus, apice trifidus. *Stigmata* truncata, obtusa. *Fructus* immaturus ut in ovario, basi sepalis disco hypogyno filamentisque persistentibus instructus.

Arbor *grandis insulæ Jamaicæ.* Rami *divaricati, graciles, lignosi, flexuosi, cortice pallide cinereo tecti.* Folia *alterna, remota, majuscula,* 4-5-*uncialia, ovata, acuminata, nunc inferne subobliqua, petiolata, subcoriaceo-membranacea, omnino integerrima, glaberrima, subtus pallidiora, e basi* 3- *rarius subquinquenervia, nervis venis transversalibus connexis, et sub lente ubique tenuiter reticulata.* Petiolus *teres, gracilis.* Stipulæ *nullæ.* Flores *racemosi.* Racemi *longissimi, filiformes, penduli, pedales et ultra simplices v. ramosi, terminales vel plerumque laterales, e ramis vetustioribus aphyllis, breviter pedunculoti.* Flores *parvi, sparsi, rarius subaggregati, brevissime pedicellati.* Pedicelli *quasi in rachin articulati, basi squamulis minutissimis subulatis bracteati.*

Lunania *racemosa.* (TABS. XI, XII.)

HAB. Woods above Rio Manna, St. Mary's, Jamaica, *Mr. Wm. Purdie.*

Mr. Purdie does not appear to have met with the ripe fruit

of this plant. The most advanced state (represented at our fig. 5.) was scarcely altered in appearance from the ovary. The plant is certainly a very remarkable one, and appears to be quite overlooked by previous travellers; and is probably confined to the district just mentioned. In some respects the flowers seem to approach the *Passifloreæ*, and Mr. Bennett (Plantæ Javanicæ Rariores, p. 189) observes that "the intimate relation of *Flacourtianeæ* (or *Prockiaceæ*) with *Passifloreæ*, *Homalineæ*, and *Samydeæ*, is sufficiently obvious."

FIG. 1, Flower; *f.* 2, hypogynous disk or cup laid open to show the pistil; *f.* 3, transverse section of the ovary; *f.* 4, stamen; *f.* 5, immature fruit—*magnified.*

On the Cuticle of Plants; by PROF. HUGO MOHL, *Translated from the German in Linnæa, vol.* 16, *p.* 401, *by the* REV. M. J. BERKELEY.

(TAB. XIII.)

Amongst those organs of plants, which as regards structure and development are still extremely obscure, is that called the cuticle. After the notion, which resulted from the inquiries of the preceding ten years, that the epidermis of plants is a layer of cells and not a simple membrane, was universally esteemed true, Ad. Brongniart (Ann. des Sc. Nat. Série I, 65) showed unexpectedly that an homogeneous or granular membrane was separable by maceration from the upper surface of the epidermis,[*] which was distinct from the walls of the cells of the epidermis, running without interruption over their commissures, clothing the whole plant with the exception of the spongioles of the roots and most stigmas, but pierced at the stomata. In later treatises this membrane has received the name of cuticle.

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[*] Link (Element. phil. bot. Ed. 2. 1. 83) refers the discovery of the cuticle to Ludwig. It is true that by maceration Ludwig separated a membrane from the surface of plants, in which he could find no cells. This, however, was the whole of the knowledge he possessed on the subject. He was not acquainted with the true epidermis, for he says, (instit. regni veg. Ed. 2, § 345), that the bark consists of cuticle and parenchym; his view is also fundamentally the same with that of the many early phytotomists, that the outer coat of plants is a simple membrane. The difference between cuticle and epidermis was established by Brongniart.

Treviranus (Physiol. I. 448) confirmed the existence of this outer membrane, though he did not regard it as a peculiar membrane, but considered it attributable to a continued deposition of a coagulable substance from within or from without.

I must myself plead guilty of another explanation of its origin, namely, from the expansion of the intercellular substance over the upper surface of the epidermal cells. I look upon this notion now as altogether erroneous, notwithstanding the support which it has received from Valentin (Repertor. für Anat. u. Physiol. 1. 100.)

Link (phil. bot. edit. 2. I. 85) follows the view of Brongniart, and says expressly that the cuticle can neither be regarded as the confluent outer walls of the epidermal cells, nor as a deposition of coagulable matter, relying on the distinctly defined separation between the cuticle and subjacent cells, as also upon the difference of colour in the parts exhibited by some plants.

Meyen (Wiegm. Archiv. 1837. I. 221. Physiol. I. 176) arrived at a totally different result in his inquiries regarding the cuticle as nothing more than the incrassated outer wall of the epidermal cells.

Schleiden now opposes this explanation, and with Treviranus regards the cuticle as a mass secreted by the epidermal cells (Grundzüge d. Wiss. Botanik. I. 288.) He says that a gelatinous substance appears in the interstices between the individual cells which hardens and forms a network; at a later period the whole cell is covered with a similar layer, which unites with the network, and is quickly indurated; then the epidermal cells secrete on their upper surface a less firm, and thick substance which raises up the earlier layer with the incorporated network, and increases to a considerable thickness.

This diversity of views led me to institute a series of observations on the subject, the result of which is exhibited in what follows:

If a transverse section of epidermis be treated with iodine, in most cases the walls of the epidermal cells remain uncoloured, and only in particular instances, as in the leaf of Cycas revoluta, Hakea pachyphylla, Elymus arenarius, they assume a more or less deep yellow tinge; the coat, however, whether thin or thick, which covers the surface of the epidermis, becomes under the same treatment, deep yellow or brown. If the epidermis thus treated with iodine be now placed in sulphuric acid, the portion of the cells which before remained colourless dissolves, and in so doing, in many cases, assumes a fine indigo; the yellow outer coat or cuticle, on the contrary, remains undissolved. This latter phenomenon is not however exhibited precisely in the same way by all plants; in most cases, the sulphuric acid has no influence, in other cases the cuticle is changed into a dark brown, which often fades after a certain time; in other cases, the cuticle becomes somewhat loose, without any real dissolution, while commonly many little air-bubbles are developed in its substance, doubtless in consequence of the decomposition of the contained carbonic-acid salts.

On examining delicate transverse sections of soft organs, which are not coated with a leather-like epidermis; as membranous leaves, herbaceous stems, petals, stamens, ovaries, we find commonly the outer layer, which is coloured yellow by iodine, very thin. The coats of the epidermal cells are either all of tolerably equal thickness; e. g. Elymus arenarius, (fig. 1), Vanilla planifolia, Helleborus fœtidus, (fig. 2); or the outer wall of the epidermal cells is decidedly thicker than the lateral and inner walls; e. g. in the leaves of Iris fimbriata, (fig. 4), Dianthus plumarius, (fig. 3), and the stamens of Tulipa Gesneriana, (fig. 5).

The cuticle in all cases appears to be a continuous membrane in which at the commissures of the subjacent epidermal cells there is no evidence that it is composed of single pieces which correspond with the outer walls of these cells. The outer surface of the cuticle is either perfectly smooth or distinguished with straight (Rumex Patientia) or irregularly branched (Helleborus fœtidus) raised lines, which frequently run uninterruptedly over the commissures of the cells; or it is studded with smaller or larger granules, as is the case with many hairs, e. g. in those of Campanula Medium, many Boragineæ, &c. These granules exhibit frequently on the hairs a spiral arrangement, and not unfrequently on the lower portions of the hair pass by extension into obliquely running streaks; whence it appears clearly that the raised lines and the isolated granules are formations of the same kind, and differ from one another only in form. In a transverse section of the leaf of Helleborus fœtidus and Dianthus plumarius, it is clear that these raised stripes are indicative of so many folds in the whole membrane.

The epidermal cells are often dotted; commonly, as in Vanilla planifolia, only on the lateral and inner walls; more rarely, as in Cycas revoluta and Elymus arenarius (fig. 1), on the outer wall also. In those cells in which the outer wall is thicker than the lateral walls, the deposition of secondary coats, on which the incrassation of the outer wall depends, seems not to take place in all cases in the same way. In many plants, as Dianthus, the secondary coats of the lateral walls evidently are continuous with those secondary coats which in the outer wall of the cell lie immediately beneath the primary membrane, and there are found on the outer wall under the above noted coat still more interior coats, which are not continued upon the lateral walls, or of which

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* In consequence of the generally toothed commissures of the epidermal cells in grasses, a peculiar crossing of the canals of the dots which lie in the angle of these walls with those of the proximate cell takes place in the point of juncture of the outer and lateral walls.

the continuation running over the lateral walls is so thin that it cannot be demonstrated. In other plants, on the contrary, as in Tulipa, the secondary coats of the lateral walls pass into the inmost coat of the outer wall; and beyond this a number of layers are found, which are deposited merely on the outer wall, and not on the lateral walls. This latter formation might easily induce one to believe that the epidermal cells consist only of the inmost layers, which surround their cavity, and that all the coats deposited upon their outer surface do not belong to the wall of the cell itself, but are coats secreted upon the outer surface of the epidermis. The observation, however, of the forms to be adduced presently, e. g. Hakea pachyphylla will prove the wrongness of such an explanation, and show that all the secondary coats are depositions in the hollow of the cells.

A structure apparently essentially different from that hitherto noticed is found in the epidermis of many thick fleshy or coriaceous leaves. Here we find the outer wall of the epidermal cells proportionally surprizingly thick as compared with their other walls, and on treatment with iodine, not merely a thin membrane seated upon the epidermis becomes quite yellow, but almost the whole mass of the outer epidermal wall assumes this colour, and all this thick coat resists the agency of sulphuric acid. The real difference however of the cuticle of these leaves from that of thin leaves consists not in its mass, but in the circumstance that instead of forming an homogeneous coat, it exhibits a composition of different parts. We see, for instance, in a thin and clean cross section of Aloë obliqua, (fig. 7), the lateral walls of the epidermal cells continuous with the *cuticle* and pass into a membrane covering the epidermis on its outer side. .There can be no doubt here that the cuticle, far from being an uniform membrane deposited on the outer surface of the epidermis, consists of the combined outer walls of the epidermal cells and a portion of the secondary membranes deposited in their cavities, and that the chemical peculiarities of the cuticle are ascribable to a metamorphosis of the cellular membrane, which only takes place in the externally situated portions of the epidermal cells.

Many slight deviations from this structure occur; sometimes the substance of all the outer wall and lateral walls as far as they lie between the secondary coat exhibits the characters of cuticle; e. g. Hoya carnosa; sometimes a stratum of colourless matter (Membranenstoffes) lies on the inner side of the cuticular coats, as far as they constitute the outer wall and a portion of the lateral walls of the epidermal cells, as in Aloë obliqua; sometimes the inner colourless stratum covers all sides of the epidermal cells, and seems at first sight to form the whole wall of the cells, as in Arbutus unedo, (fig. 6); Cactus triangularis, and Viscum album; sometimes the primary lateral walls of the cells are so far changed into the cuticular mass, as they are covered with a yellow secondary coat, as in the Aloë obliqua; sometimes this change in the primary lateral walls extends inwards further than that in the secondary coat, and therefore they enter between the uncoloured secondary lateral walls in the form of plates, as in Arbutus unedo.

When the yellow mass which fills the outer portion of the cavity of the cell appears uniform, as in the cases just adduced, one is with difficulty convinced that one has to do with secondary membranes; on the contrary, especially when the uncoloured inmost coats form closed utricles as in Viscum, it is easy to imagine, that these unclosed membranes constitute the whole epidermal cell; and that the yellow or brown outer mass is a deposition external to the cells, in accordance with the views of Treviranus and Schleiden.

In these cases a proof that the yellow coats are deposited within, and not externally to the epidermal cells, is found in the presence of the primary wall of the cell upon the outer surface of the cuticle, as also in the circumstance that the primary membranes of the lateral walls run through the cuticle to the outer coat. But inasmuch as this formation admits of another, though as I conceive a forced explanation, it is necessary to search for examples which are less ambiguous. Such are afforded by the following observations. In the epidermis of the stem of Kleinia neriifolia, as in Hoya carnosa, the inner uncoloured coat, which is so easily taken for the whole epidermal cell is wanting; and the incrassated outer membrane, which is turned brown by iodine, is very clearly seen to be composed of many coats lying one over the other, which are deposited on the outer wall of the cell within its cavity, and by which the continuation of the lateral walls to the outer surface, as one membrane is clearly proved. The same appearance is exhibited in the epidermis of the leaf of Hakea pachyphylla (in which the inner coat is really present, though like the true cuticle, it assumes a yellow tinge with iodine, and is proved by its dots to be a secondary membrane), if the epidermis is treated with sulphuric acid, (fig. 8), for the mass deposited in the cavity of the cells is then seen evidently to consist of coats. In the epidermis of Hakea gibbosa the laminated structure is not only clear without the application of sulphuric acid in the greatest part of this deposited mass, but there are found also in it a great number of radiating narrow dot-canals which leave no doubt as to its real nature. In many cases, as in Taxus baccata, the different colouring also which the inner and outer portions of the cuticle assume from the action of iodine indicate a similar lamination.

If these cases shew with the most complete evidence, that the cuticle is formed of the outer thickened walls of the epidermal cells, in many other plants possessing a thick cuticle it is not easy to ascertain the fact, since the different parts which compose the cuticle are more or less perfectly combined into an homogeneous mass.

We must distinguish here some modifications.

A. In many plants, e. g. Sanseviera zeylanica, Nerium Oleander, Agave lurida, the primary membrane is recognisable as a distinct stratum, as also many layers of secondary membrane on the outer wall, and the outer half of the lateral walls of the epidermal cells, of which the innermost is not coloured by iodine, while the more external layers become brown. Between these layers and the primary wall, we find a more or less thick, light coloured homogeneous stratum. If we compare this structure with the epidermis of Taxus baccata, it cannot be doubted that this middle homogeneous layer consists of the outer secondary membranes of the epidermal cells, which have contracted so intimate a union with one another, that the limits between the different cells are no longer visible.

B. If in the preceding case, together with a visible lamination of the wall of the cells, they are combined laterally to such a degree as to lose all trace of their original division, in other cases, on the contrary, in combination with a distinct preservation of the boundary lines between the different cells, we have a perfect amalgamation of the different yellow-coloured coats of the same cell, e. g. Phormium tenax, Aloë margantifera.

C. Lastly it happens, that this intimate amalgamation, as well of the coats of each individual cell, as of the different cells one with another takes place to such a degree, that the cuticle forms one uniform mass. This intimate amalgamation takes place only in the outer layers of the cuticle, while, in the inner layers a distinction of individual cells and membranes is possible, as in Ephedra Distachya, Ilex Agnifolium; sometimes it is found in the entire cuticle, as in Phormium tenax,* Lomatophyllum borbonicum, Ruscus aculeatus, Cycas revoluta.

With this last form we have arrived at a modification of the cuticle, which agrees in reality with the cuticle of soft herbaceous parts, with which we commenced. In either case the cuticle appears as an homogeneous membrane which invests the epidermal cells on their outer side, with the single exception, that in the thick coriaceous leaves of a Cycas they form a thick stratum, while in the thin leaves of a Dianthus they form a thin stratum, and that in the thick leaves the cuticle generally gives rise to attenuated laminæ, which make their way between the epidermal cells. If then, the observations adduced, prove that the cuticle of coriaceous leaves is no distinct membrane; but arises from the union of the primary cellular membrane with a greater or less quantity of secondary layers of the epidermal cells, we are compelled to allow the same mode of development in the thin cuticle of herbaceous leaves.

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* Though the leaf of this plant has no upper or under side; but both surfaces of the leaves correspond with the under side in other plants, the epidermis of either side is not exactly of the same nature. This observation applies also to many species of Iris.

In all the forms hitherto examined, the cuticle was situated on the outer side of the epidermal cells, or rather was formed through incrassation of their walls. The cuticle of the leaves of Billbergia zebrina and Bromelia ananas is an exception to this, for in these cases the outer wall of the epidermal cells exhibits only a moderate thickness, while that of the inner wall is considerable, and at the same time the subjacent layer of cells possess thickened walls on their outer side, so that the cuticle thus formed lies between two rows of cellular cavities.

The union of the cuticle with the other membranes of the epidermal cells is in leaves and stems very intimate. The case is quite different with the cuticle of the stigmatic papillæ of many plants, since it possesses a greater compass than the cells inclosed by it, consisting of secondary membrane, as is very beautifully seen in Convallaria multiflora, Papaver orientale and Glaucium luteum. According to the assertion of Hartig (neue Theorie der Befrucht. der Pfl. S. 23) in this case the cuticle does not clothe the whole hair; but extends only to the point where the base of one hair is joined to that of another, over which it passes without interruption, and thus forms a common envelope. I am unable, however, to confirm this, though in the above named plants, especially in Papaver orientale I have separated the papillæ from one another, and seen merely the membrane distinctly surrounding the whole hair under the form of a closed cell. The interval between the outer thin membrane which is coloured yellow by iodine, and the inner thick secondary membrane, in general not capable of being so coloured, is filled with fluid, through which the pollen tube, after it has burst through the outer membrane, descends.

Notwithstanding the perfect proof afforded by the abovementioned facts, that the cuticle is formed of the outer coats of the epidermal cells, this inference for a long time appeared to me very doubtful, in consequence of the raised lines which are found on the cuticle of many plants passing frequently without any interruption from one cell to another, (compare the cuticle of the stem of Rumex Patientia with that of the leaf of Helleborus fœtidus). This phænomenon, independent of the structure of the individual epidermal cells appeared to shew that the cuticle ought to be considered as a distinct membrane. The alleged observations, however, contradicted this so strongly, that I was compelled to consider it erroneous; and in point of fact, it appears that the continuation of the raised lines over the commissures of the cells on a closer inspection does not contradict the explanation given above of the origin of the cuticle.

The examination of the epidermis in different periods of growth, shews that the epidermal cells of organs in an early stage of growth are perfectly smooth, and that not till after the deposition of secondary coats in the cells, and after the change of their upper surface into a characteristic cuticle, those elevations in the form of continuous lines or isolated granules are at all visible. Its production is a consequence of a partial growth in the outer layers of the epidermis, which takes place at a late period of its evolution. This growth, and the elevation of the outer surface into stripes, and papillæ seems to stand in intimate connexion with the chemical metamorphosis which the cellular membrane undergoes in the course of its change into cuticle; at least, this view seems strengthened by the circumstance, that in many species of aloës, e. g. Aloë margaritifera, the inner side of the cuticle is raised into warts similar with those on the outer surface; while the innermost coat, which dissolves in sulphuric acid, and is not colourable by Iodine is perfectly even. Since the cuticle increases in thickness with age, and this increase can only take place by the change of the coat which dissolves in sulphuric acid into the cuticular mass; this change appears to consist not merely in a chemical metamorphosis of the cellular membrane; but also to be combined with a change of structure. The membranes changed into cuticle, appear in consequence of this metamorphosis as a peculiar organ, distinct both as to substance and structure from the epidermal cells. The portion of the cuticle arising from each epidermal cell is in so intimate a connexion with the adjacent portions arising from other epidermal cells, that not only in many cases the eye cannot trace the commissures; but also the growth to which those raised lines over their origin is in common. Thus the cuticular membranes arising from different cells run together into a common compound organ, somewhat in the same way as the lateral walls of a long row of vascular cells after the disappearance of their dissepiments form one compound organ; viz. a vessel. This circumstance justifies us completely in distinguishing the cuticle by a particular name as a distinct coat from the epidermis, though I hope the above observations have proved that it is formed of the outer walls of the epidermal cells themselves.

Tübingen, July 1, 1842.

Explanation of Plate. (Tab. XIII.)

1.	Epidermis of leaf of	Elymus arenarius
2.	ditto	Helleborus fœtidus
3.	ditto	Dianthus plumarius
4.	ditto	Iris fimbriata
5.	ditto of stamen of	Tulipa Gesneriana
6.	ditto of leaf of	Arbutus Unedo
7.	ditto	Aloë obliqua
8.	ditto (treated with sulphuric acid)	Hakea pachyphylla
9.	ditto of leaf of	Phormium tenax
10.	ditto from the other side of the leaf.	

We have only selected such of the figures as are absolutely necessary for the comprehension of the Paper. In the original there are 34 figures, filling two large quarto plates.

DECADES OF FUNGI.

Decade II. *By* C. MONTAGNE, D.M. *and the* REV. M. J. BERKELEY, M.A. F.L.S.

(*With Two Plates,* TABS. XIV. XV.)

About the same time a small collection of Fungi made by Zollinger in Java was placed in my hands by Sir W. J. Hooker, and in those of Dr. Montagne by M. le Comte Jaubert; Dr. Montagne having written to me respecting one or two of them, but especially respecting a very interesting Hymenomycetous genus, and finding that I had already purposed describing the species in the London Journal of Botany, very kindly proposed that they should be published in our joint names. To this I most readily acceded, and must frankly own that I am indebted to him for some very valuable observations. The greater part of the species are quite distinct from anything that Junghuhn published in his paper on the Fungi of Java, a fact which makes it probable that the mycology of that country is very rich. To the species of Zollinger I have added a fine Hydnum collected in Java by Spanoghe, and to complete the decade two species sent by Schomburgk from British Guiana.

11. HYMENOGRAMME, n. g.

Hymenium lamellosum. *Lamellæ* confertæ omnium tenuissimæ et angustissimæ, vix nisi oculo armato conspicuæ, longitrorsùm flexuoso-parallelæ, sæpissime furcatæ atque inde spurie canaliculatæ, juncturis obliquis aut transversalibus anastomosantes, minutissime, forsan e conidiis, niveo-farinosæ.—Fungus *lignatilis e mycelio floccoso (niveo) fibras lignosas profunde intrante longe lateque diffuso compositus, resupinatus. Genus* Agariceum Lenziti *affine a quo non solum hymenophoro floccoso lignum miro modo penetrante, nec,* *ut in Lenzite, subereo nec coriaceo, sed etiam lamellularam structurâ formâque differt.*

H. *Javensis,* Mont. and Berk. (TAB. XIV.)

Java. *Zollinger n.* 969.

Effused for several inches and forming a nearly uniform stratum about ½ a line thick, springing from a white floccose mycelium consisting of intricate osculating irregularly branched inarticulate threads, which penetrate deeply into the substance of the matrix, and are quite confluent with its fibres; margin distinct, not the least byssoid, slightly attenuated and elevated. Hymenium pale straw colour, consisting of extremely delicate linear lamellæ, which are frequently forked and connected by anastomosing branches so as to form parallel slightly sinuous elongated alveoli. In general it is at a considerable distance from the point of bifurcation that the gills begin to diverge, and consequently the edges appear canaliculated as in Trogia, though they are not really grooved. They are clothed with a white farinose substance consisting of minute subglobose bodies which are either the true spores or conidia. In a vertical section there is a darker line corresponding with each gill, which seems to indicate that the plant is of slow growth.

This genus is a nearer approach to the more perfect forms of *Hymenomycetes* even than *Lenzites,* and is to *Polyporus* what *Lenzites* is to *Dædalea.* The spurious canaliculation of the gills is an exaggeration of the little groove which often appears at the commencement of the bifurcation of gills or folds, as for instance in *Cantharellus Aurantiacus.* It is possible that this may be the same species with what Junghuhn has described under the name of Laschia crustacea. Unfortunately the figure is not contained in any of the copies of his memoir which we have seen, and there are certain difficulties about the description. But even should it be the same it would be necessary to propose a new generic name as that of Laschia has been given by Fries to a different fungus. His second species of Laschia belongs clearly to some other genus.

Tab. XIV. fig. 1. Plant nat. size. *a.* Hymenium of H. Javensis magnified 60 diameters. *b.* Vertical section of ditto magnified 50 diameters. *c.* Threads of mycelium highly magnified.

*Schizophyllum *commune,* Fr.

Java. *Zollinger,* n. 519.

12. Polyporus (Mesopus) *Schomburgkii,* Mont. et Berk., gracilis coriaceo-suberosus; pileo orbiculari depresso umbilicato quandoque laterali, fisso-lobato tenui rigidiusculo concentrice zonato radiatim ruguloso sericeo-striato fusco-umbrino intus stipiteque gracili flexuoso rugoso concolori; hymenio concaviusculo sepiario; poris minimis rotundis, dissepimentis tenuibus.

British Guiana. *Schomburgk.*

Pileus ¼-2 inches across, coriaceo-suberose rather rigid about a line thick orbicular deeply incised and lobato-crenate depressed umbilicate repeatedly zoned concentrically, with the zones waved from radiating slightly rugose lines, sericeo-striate, rather shining, but not the least laccate, of a brown umber as is also the internal substance. Stem 1½ inches or more high, ½ a line thick, of the same colour as the pileus flexuous marked with short longitudinal pits either perfectly central or lateral. Hymenium sepia-brown approaching to black, slightly concave, even; pores very minute, scarcely visible to the naked eye, about ¼ of a line deep: dissepiments very thin.

This species in some respects resembles *Pol. auriscalpium,* which has the stem occasionally central; but from an inspection of authentic specimens of that plant, it appears that it is a far more elegant and very distinct species. The pileus has not the slightest laccate crust, though this point is not always to be depended on.

* Pol. *xanthopus,* Fr.

Java. *Zollinger,* n. 1082.

The stem in these specimens is not yellow, as is usual in the species, but of the same colour as the pileus. There is, however, no other difference. In one individual the stem is inclined to be proliferous.

* Pol, *sanguineus*, Fr.

Java. *Zollinger*, n. 8.

13. Pol. (Apus) *pullus*, Mont. et Berk. minimus, subimbricatus lateraliter confluens durus; pileo dimidiato porrecto semiorbiculari conchato, supra subtilissime velutino minute concentriceque zonato, hymenioque spadiceo-pullo, zonis tenuibus subcristulatis; margine acuto scabriusculo, poris contextuque ferrugineo-fuscis minutis angulatis ore cinereis.

Java. *Zollinger*, n. 983. 1000.

Pilei subimbricate laterally confluent dimidiate conchiform or ungulate with the apex often elongated, and then subtriquetrous hard $\frac{1}{3}$-$\frac{1}{2}$ of an inch broad, $\frac{1}{3}$ of an inch long, dark red brown very minutely velvety marked with fine concentric zones which are often slightly crested; margin acute slightly scabrous. Hymenium concave, cinereous or cinnamon; pores proportionably rather long minute punctiform slightly angular ferruginous within as is the substance of the pileus, not properly stratose, though a new layer is deposited from time to time on the old surface of the hymenium.

A very curious little species allied to *Pol. spadiceus*, Berk., *Pol. tabacinus*, Mont. and *Pol. pectinatus*, Klotzsch; but distinct from all. The substance is remarkably hard, and of a less yellow tint than in *Pol. pectinatus*. It is distinguished from *Pol. spadiceus* by its whole habit and far harder substance, and from all the three by many characters.

14. Sistotrema *autochthon*, Mont. et Berk. totus effusus resupinatus subiculo membranaceo subtus tomentoso, demum sicco fragilissimo; ambitu indeterminato; hymenio inequabili pallido; lamellulis brevibus irregularibus poros spurios magnos formantibus.

Creeping over red earth with a chalky substratum. Java. *Zollinger*, n. 390.

Forming patches two or more inches broad which follow all the inequalities of the soil. Subiculum thin membranaceous formed of delicate byssoid threads which penetrate here and there into the earth in little villous tufts in some parts loosely interwoven, but in other parts more compact, partially separable when fresh, but when dry very brittle. Border indeterminate without any byssoid fringe. Hymenium uneven, following the inequalities of the soil irregular sprinkled with patches of short flat tooth-like processes which form more or less distinct but extremely irregular large pores, which in the most highly developed portions of the hymenium are of a pale tan-colour. The internal tissue of the lamellar processes is remarkably complicated forming a net-work from the frequent anastomosing of the irregular flocci of which it is formed. The connexion of these with the fructifying surface, whose structure in the dry plant is very obscure, has not been ascertained satisfactorily.

This is one of those species which it is difficult to refer to any genus; the structure of the present, however, appears to be exactly that of *Sistotrema,* though it might with nearly equal justice be associated with *Pol. radula*, *aneirina*, *&c.* Nothing can be more irregular than the disposition of the processes which though forming loose pores are from the very first toothed and irregular.

15. Hydnum *sclerodontium,* n. s. orbiculare totum effusum resupinatum; subiculo tenui lævi glaberrimo nitido ochraceo; aculeis sparsis rotundis attenuatis longissimis flexuosis rigidis hic illic divisis rufis.

Java. *Spanoghe;* on bark.

Forming large orbicular patches 3 inches or more in diameter. Effused and perfectly resupinate. Subiculum thin adnate ochraceous very smooth and shining; margin white, extremely narrow and indistinct scarcely byssoid. Aculei scattered half an inch or more long round slightly attenuated acute flexuous rigid as thick as a bristle, here and there, but rarely divided, of a rich rufous brown. The subiculum sometimes runs up the base of the aculei for some distance and sometimes clothes the shorter ones entirely.

This is a very fine and remarkable species resembling in some respects *H. crinale,* but differing in its scattered aculei and in several other points. The aculei are in this species so large and distinct that it might almost be referred to the genus *Clavaria,* so intimately are the genera connected in Hymenomycetous Fungi.

16. Irpex incrustans Mont. et Berk. pileo effuso-reflexo margine in lobos semiorbiculares diviso subcoriaceo tomentoso albo-ochraceo, subiculo tomentoso; dentibus lamelloso-seriatis incisis acutis ochraceis.

British Guiana. *Schomburgk.* On dead sticks.

Running for several inches over dead sticks which it completely incrusts, spreading beyond them, and forming many semiorbicular lobes; thin of a soft but coriaceous texture indistinctly zoned above, pallid ochraceous clothed with short matted down. Hymenium consisting of flat acute slightly lobed teeth which are arranged more or less distinctly in lamelliform series, of a more or less deep ochraceous tint. The lamelliform arrangement is very distinct towards the margin; but as is usual parts of the plant exhibit more or less distinct pores which are, however, evidently not the normal structure.

This species which illustrates admirably the genus Irpex, bears a strong resemblance to well-developed individuals of Hydnum ochraceum, though the processes of the hymenium are totally different.

17. Stereum *obliquum,* Mont. et Berk. minimum coriaceum pileo verticali elongato flabelliformi polito glabro subzonato sub lente sericeo-striato castaneo-badio; stipite e basi orbiculari oriente erecto laterali velutino cervino. Hymenio definito subcinereo lineolato.

Java. *Zollinger,* n. 983.

Whole plant, not exceeding 1¼ inch in height. Pileus thin coriaceous elongated spathulato-flabelliform of a chesnut brown inclining to bay, obscurely zoned shining but under a lens finely seriato-striate; margin indistinctly fimbriate. Stem about $\frac{1}{2}$ an inch high, not $\frac{1}{2}$ a line thick erect springing from a membranous orbicular base, velvety, of a yellowish fawn colour. Hymenium distinctly defined; often with a little raised border at the base springing from the edge of pileus ochraceoûs with a cinereous tinge subsetulose, distinctly though minutely marked with elongated sometimes branched lines.

A very elegant species which cannot be confounded with any described species. It resembles, perhaps, *Thelephora aurantiaca* more than any other Fungus; but it is abundantly distinct.

* Stereum *lobatum*, Kze.

Java. *Zollinger*, n. 91.

* Nidularia *byssiseda*, Jung.

Java. *Zollinger*, n. 201.

* Guepinia *fissa*. Berk.

Java. *Zollinger*, n. 123.

Not so much divided as the original specimens in the British Museum; but otherwise not different.

18. Dothidea *examinans*, Berk. et Mont. gregaria, erumpens, tuberculosa, nigra; tuberculis cæspitosis depressis collapsis opacis intus unipluri-cellulosis. Sphæria examinans, Berk. in Hook. Lond. Journ. of Bot. vol. i, p. 156.

On decayed sticks bursting through the bark. Java. *Zollinger*, n. 520.

Forming little gregarious scattered or seriate patches scarcely a line broad of an opake black. Patches tuberculated; tubercles depressed, excavated, as if collapsed, consisting externally of a cellular coat, which when viewed by transmitted light is of a deep blue, internally containing sometimes a single cell only; but more generally a large quantity of subglobose cells without any proper perithecium immersed in a cellular black stroma. Asci short obtuse containing subcymbiform brown sporidia. The opacity of the outer surface of the tubercles arises from the contraction of the walls of the cells of which it is composed.

This species has exactly the habit of a Sphæria of the Cæspitose tribe; but there is no real perithecium, and though the tubercles sometimes contain but a single cell, there are generally a great many cells, and the species must therefore be referred to *Dothidea*. Dr. Montagne had proposed for it the name of *D. pseudo-sphæria*; but as the Philippine Island plant proved to be the same species, the original specific name has been retained.

19. Doth. *Zollingeri,* Mont. et Berk. orbicularis, stromate epiphyllo atro-nitente, cellulis minimis conico-hemisphæricis tectis aggregatis nitidis poro inconspicuo pertusis. Sporidiis oblongis fuscis biloculatis.

On living leaves. Java. *Zollinger,* n. 308. (Tab. XV. B.)

Forming on the upper surface of the leaf, exactly orbicular plane sometimes confluent spots ¼ of an inch broad, of a shining pitchy black, and rough with the ostiola. Perithecia very small covered conico-hemispherical depressed shining scarce ⅙ of a line in diameter pierced above with a scarcely perceptible pore. Asci short obtuse containing eight bilocular oblong sporidia which are constricted in the middle and have a single oil-globule in each division. These are at first hyaline but at length become brown and are twice as long as at first. Paraphyses linear slightly branched. Amongst the paraphyses are found abortive asci which present exactly the appearance of the young spores of a *Diplodia.* On the under side of the leaf there is a little depression answering to each spot.

This species which is a very beautiful one varies extremely in size. It is only in the finest patches that perfect asci have been found. The same leaves are sprinkled with *Micropeltis applanata,* Mont. in fine condition, a species found hitherto only in Cuba.

Tab. XV. B. *fig. a.* paraphyses and abortive asci, with a portion of the cellular stroma; *b.* asci and sporidia, with paraphyses; *c.* tip of one of the asci, with sporidia; *d.* spores in different stages of evolution: *highly magnified.*

20. Doth. *appendiculosa,* Mont. and Berk. stromate suborbiculari plano epiphyllo fusco opaco ambitu breviter et minutissime fimbriato; cellulis hemisphericis prominulis; ascis brevibus; sporidiis oblongo-ellipticis basi appendiculatis fuscis, sursum circumscissis. (Tab. XV. A.)

On living leaves. Java. *Zollinger*, n. 803.

Forming epiphyllous, scattered, suborbicular, opake, brown, flat spots about half a line broad, mixed with smaller spots, which contain a single cell only. Border shortly, but very distinctly fringed under the microscope. Cells hemispherical, for the most part projecting above the surface of the stroma, which is quite superficial, indistinctly perforated. Asci short, obtuse, containing eight brown oblong elliptic sporidia, furnished at the base with a little colourless papilla, in general, circumscissile at the apex, though the division sometimes takes place nearer to the centre. The fimbriated margin consists of branched threads formed of short, generally nearly square articulations.

This species is as to its stroma, an *Asteroma*; but it contains distinct asci, which enclose eight very curious sporidia, resembling in form the seeds of the Buck bean, being furnished with an appendage at the base, as in *Sphæria Thyrsus,* Berk. In outward form it resembles somewhat *Dothidea conspurcata,* Berk.; but differs in the structure of the stroma, and if the minute elliptic bodies observed in that species be reproductive, most materially as to the sporidia. The stroma is so completely superficial, that there is no indication of the spots on the under surface of the leaves. Both in this and the last species, the fungus is accompanied by a species of Phyllocaris, which in Dothidea Zollingeri, sometimes overruns the spots.

Tab. XV. *fig. a.* flocci, of which the stroma is composed; *b.* ascus, with sporidia; *c.* sporidia: *highly magnified.*

Enumeration of LEGUMINOSÆ, *indigenous to* SOUTHERN ASIA, *and* CENTRAL *and* SOUTHERN AFRICA, *by* GEORGE BENTHAM, ESQ.

(*Continued from* Vol. II, p. 613.)

XVIII. LISTIA. *E. Mey.*

The habit and most of the characters of the single species known of this genus are so exactly those of the section *Polyolbium* of *Lotononis,* that it ought probably to be added to the latter genus as a mere section, yet the singular manner in which the pod is folded is considered among Hedysareæ, for instance, as affording a sufficient character, and I have not observed any approach to it in any *Lotononis* I am acquainted with.

1. L. *heterophylla* (E. Mey.! Comm. p. 81.)—Habitus *Lotononidis trichopodæ.* Flores subcapitato-racemosi, pedunculo communi foliis longiore. Calyx et corolla sectionis *Polylobii.*

South Africa, to the north-east of the Cape Colony, on dry stony hills near Gaatje, and in the plain near Wildshutshoek, *Drège!* In the Stormbergspruit and on the Mooze River, *Burke!* also n. 2297 of *Burchell's* Catalogue.

XIX. ROTHIA, *Pers.*

This genus is again composed of a single species, the characters and synonyms of which are fully enumerated by Wight and Arnott (Prodr. 1, p. 195), to which may be added that the pod usually opens out on the carinal suture only, assuming much the appearance of the fruit of a *Cleome.* The habit of the plant is that of the more slender *Argyrolobia,* or of some *Lotononides* of the section *Leptis.* It is readily distinguished from both genera by the keel petals scarcely cohering to each other, or often entirely free. The flowers are very small.

1. R. *trifoliata* (Pers.—W. et Arn.! Prodr. 1, p. 195 cum syn. omn.)

Apparently a common plant in the East Indian Peninsula but I have not seen it from any other locality.

XX. Xerocarpus, *Guillem. et Perrott.*

Another single species, a small plant with the habit and all the characters of *Rothia*, excepting the pod, which, although it opens in the same manner, is very different in form.

1. X. *hirsutus*, (Guillem. et Perrott! Fl. Seneg. 1, p. 170, t. 44.)

Tropical Africa. Sandy hills near Kouma in the Walo country, *Leprieur* and *Perrottet!* Cordofan, *Kotschy! n.* 420.

XXI. Argyrolobium. *Eckl. et Zeyh.—Chasmone, E. Mey. —Trichasma, Gamochilum et Argyrolobium, Walp.*

This genus, as limited by E. Meyer as well as Ecklon and Zeyher, and adopted by Meissner, Spach and others, is a natural one, and readily known among *Genisteæ* by the calyx of a *Dichilus* with the corolla nearly that of *Crotalaria* and a pod not unlike that of some *Tephrosiæ*. It has however been divided by Walpers into three, according to the depth to which the calycine lobes are separated, but this character does not appear to be in sufficient conformity with habit, nor even constant enough in the same species to be available even for sectional divisions.* The Cape species have been distributed by Ecklon and Zeyer according to their stature and duration, both very difficult to ascertain from dried specimens, E. Meyer has proposed a better arrangement derived from inflorescence; and Spach, in working up the northern species has proposed for almost every species separate sections founded on the slightest characters, a process which, if carried through the whole genus, would not much facilitate the determination of species. To me it appears that the pod affords an important distinctive character, separating the northern species and one Cape one (A. *lanceolatum*) from the remaining southern ones. Adopting these two groups as sections, I have followed E. Meyer in the subdivision of his *Chasmones* according to their inflorescence, observing however that many of the species with pedunculate few-flowered racemes have often the earlier and lower flowers sessile and solitary, a circumstance which occasions some difficulty in determining the place of a few species of which I have not seen authentic specimens, and may have been the cause of repeating them under different names.

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* I regret much the differing so widely in opinion as to the circumscription of Leguminous Genera from Dr. Walpers, whose compilations, and especially his Repertorium, are of so much use in abridging the labour of hunting out published species. Where we differ as to the synonymy of the distributed Cape collections, it may sometimes have arisen from mistakes in the distribution of the specimens. Thus, when Dr. Walpers asserts that I am quite wrong ("vehementer errat") in referring the *Ingenhoussia rosea*, E. Mey. to *Coelidium*, for that it is nothing but *Amphithalea densa*; it is

Sect. I. CHASMONE. Legumen intus nudum, valvulis convexis continuis. Species omnes Austro-Africanæ.

§ 1. *Spicata.* Caules e radice perenni virgati, simplices. Flores in spicam terminalem dispositi.

1. A. *crinitum* (Walp. Linnæa, 13, p. 506).—*Chasmone crinata*, E. Mey. Comm. p. 71.—This is only known to me from the description given by E. Meyer, who doubts whether it may not prove generically distinct when the fruit is known.

Trado in the Zwarteberg range, *Drège.*

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probable that the plant sent to Berlin by Drège as the *Ingenhoussia rosea*, is by some mistake, the *Amphithalea densa*, whilst my specimen, also received from Drège, as well as E. Meyer's description, differ in several important points from the genus *Amphithalea*, and especially in the striking peculiarity of *Coelidium*, the having the leaves convolute and covered with close appressed hairs on the *upper* side. It has also decidedly monadelphous stamens and the ovarium uniovulate.

§ 2. *Racemosa.* Caules e radice perenni herbacei, erecti. Flores in racemos terminales longiuscule pedunculatos dispositi.

2. A. *speciosum* (Eckl. et Zeyh.! Enum. p. 187) glaucescens, glabra v. sericeo-pilosa, caule erecto triquetro rigido, stipulis ovato-lanceolatis acutis superioribus petiolo longioribus, foliolis obovatis oblongis v. foliorum superiorum lanceolatis, racemo elongato, calycis labio inferiore ad medium trifido, legumine sericeo.—*Chasmone diversifolia*, E. Mey! Comm. p. 71.

North-east of Cape Colony. Katberg and between Zandplaat and Kouga, *Drège!* Winterberg, *Ecklon and Zeyher!* Macalisberg, *Burke!*

3. A. *baptisioides* (Walp. Linnæa, 13, p. 306), subsericeopilosa, caule erecto ramoso, stipulis linearibus subulatisve superioribus petiolo brevioribus, foliolis cuneato-oblongis, racemo laxo,. calycis labio inferiore tridentato.—*Chasmone baptisioides*, E. Mey.! Comm. p. 71.

On the Katberg, *Drège!*

4. A. *longifolium* (Walp. Repert. 2, 844), sericeo-villosum, caule erecto, ramis gracilibus tereti-striatis, stipulis lineari-setaceis petiolo abbreviato, foliolis elongato-linearibus lanceolatisve, racemis remote paucifloris, pedicellis abbreviatis, calycis labio inferiore quam supremum longiore incurvo tridentato, legumine villosissimo.—*Chasmone longifolia*, Meissn.! supra v. 2, p. 74.

Summit of the Tafelberg near Port Natal, *Krauss!* n. 214.

5. A. *tuberosum* (Eckl. et Zeyh.! Enum. p. 188), glabrum v. tenuiter sericeo-pubescens, caule erecto gracile parum ramoso superne triquetro, stipulis lanceolato-setaceis petiolo pluries brevioribus v. raro longioribus, foliolis lineari-lanceolatis v. infimis obovato-cuneatis, racemis longe pedunculatis laxe paucifloris, calycis sericei labiis subæqualibus, inferiore tridentato, dentibus acuminatis, legumine demum glabriusculo.—A. *angustifolium*, Eckl. et Zeyh. l. c.—*Chasmone tuberosa*, Meissn. supra, v. 2, p. 73.

Uitenhage district and from thence to beyond the north-east frontier, *Ecklon and Zeyher! Burke!* also n. 4725 of *Burchell!*

§ 3. *Fruticosa.* Frutices ramosissimi, floribus in racemos breves terminales dispositis.

6. A. *polyphyllum* (Eckl. et Zeyh.! Enum. p. 184), tenuiter sericeo-pilosum, foliosum, stipulis lanceolato-setaceis, foliolis cuneato- v. obovato-oblongis apiculatis, calycis sericei labio inferiore tridentato, vexillo sericeo, legumine dense sericeo.—*Chasmone cuneifolia*, E. Mey.! Comm. p. 71.

To the north-east of the Colony; on the Chumi and Winter Mountains, *Ecklon and Zeyher!* On the Katberg and between the Keiskamma and the Buffel River, *Drège!*

7. A. *crassifolium* (Eckl. et Zeyh.! Enum. p. 184), stipulis minimis setaceis, foliolis obovatis obcordatisve supra glabris subtus ramulisque sericeis, calycis sericei labio inferiore subintegro v. breviter tridentato, vexillo glabro.—*Dichilus crassifolius*, E. Mey. Linnæa, 7, p. 154. *Chasmone crassifolia*, E. Mey. Comm. p. 72. *Chasmone goodioides*, Meissn.? supra v. 2, p. 75. *Argyrolobium incanum*, Eckl. et Zeyh. Enum. p. 185, teste Walp.

Uitenhage district, *Ecklon and Zeyher!*—This and the following species are occasionally cultivated in our greenhouses.

8. A. *sericeum* (Eckl. et Zeyh.! Enum. p. 184), laxe ramosum, sericeo-villosum, stipulis setaceis petiolo plerumque brevioribus, foliolis late obovatis obcordatisve supra demum raro glabratis, racemis ovatis plurifloris, calycis dense sericei labio inferiore integro v. brevissime tridentato, vexillo glabro, legumine sericeo-villoso.—*Dichilus sericeus*, E. Mey. Linnæa, 7, p. 154. *Chasmone holosericea*, E. Mey.! Comm. p. 72. *Gamochilum sericeum*, Walp. Linnæa, 13, p. 510. *Chasmone obcordata*, E. Mey.? Comm. p. 72. *Gamochilum obcordatum*, Walp.? l. c. *Galega trifoliata*, Thunb. Fl. Cap. p. 600, is referred here with some doubt both by E. Meyer and Ecklon and Zeyher, but Thunberg expressly describes the stamens as diadelphous.

In Uitenhage near the Vanstaadens and Krom River, *Ecklon and Zeyher! Drège!* etc. also n. 4649 and 4775 of *Burchell's* Catalogue.

9. A. *umbellatum* (Vog. ex Walp. Linnæa, 13, p. 509), referred by Walpers with the preceding one to his genus *Gamochilum,* is unknown to me, and from the description given appears to differ chiefly in having the flowers in a terminal umbel.

§ 4. *Brevipedes.* Suffrutices. Flores solitarii v. gemini, rarissimi plures, subsessiles, oppositifolii.

10. A. *stipulaceum* (Eckl. et Zeyh.! Enum. p. 187), caulibus brevibus erectis longe pilosis, stipulis foliaceis ovatis v. ovato-lanceolatis foliola æquantibus, petiolo brevissimo, foliolis oblongis cuneatisve reticulatis subtus sericeis, pedunculis brevibus subumbellatim 1-5-floris, calycis sericei labio inferiore tridentato, vexillo dense sericeo.—*Chasmone verticillata,* E. Mey.! Comm. p. 72.

On the Winterberg near Philipstown, *Ecklon and Zeyher!* On the Katberg and between the rivers Key and Basche, *Drège!*

11. A. *candicans* (Eckl. et Zeyh. Enum. p. 186), humile, erectum, ramosum, dense sericeo-villosum, stipulis ovatis v. ovato-lanceolatis nonnullis foliola subæquantibus, petiolo brevi, foliolis obovato-cuneatis dense sericeo-villosis, floribus solitariis subsessilibus. — *Chasmone sessiliflora,* E. Mey.! Comm. p. 72.

On the Winterberg, *Ecklon and Zeyher.* On the Windvogelberg, the Wittbergen, and at Moozplatz, *Drège!*

12. A. *collinum* (Eckl. et Zeyh.! Enum. p. 186), humile, erectum, subramosum, dense sericeo-villosum, stipulis lanceolato-setaceis, petiolo brevissimo, foliolis obovatis apiculatis, floribus solitariis geminisve subsessilibus, vexillo villosissimo, legumine sericeo-villoso.—*Chasmone apiculata,* E. Mey.! Comm. p. 73.

Uitenhage: Adow, *Drège! Ecklon and Zeyher,* near Bosjesmans River and between the Zwartkop and Vanstaadens Rivers, *Ecklon and Zeyher!*

13 ? A. *obovatum* (Eckl. et Zeyh. Enum. p. 185).—*Dichilus obovatus,* E. Mey. Linnæa, 7, p. 154.—The short character given of this plant affords nothing to distinguish it from A. *collinum.* Walpers places it amongst the long peduncled species: E. Meyer only describes the peduncles as shorter than the leaves, but how much shorter is uncertain. It will probably turn out to be a mere variety of the preceding.

Uitenhage: in Karroid places between the Kouga and Zondag Rivers, *Ecklon and Zeyher !*

14. A. *velutinum* (Eckl. et Zeyh. Enum. p. 186), ramosum, undique sericeo-villosum, stipulis ovatis v. ovato-lanceolatis petiolo brevioribus, foliolis obovatis oblongisve obtusis emarginatisve, floribus solitariis geminisve subsessilibus, calycis labio inferiore tridentato, vexillo villoso, legumine sericeo-villoso.

Sides of the Table Mountain, *Mundt !* near Simonstown, *Ecklon and Zeyher.*

15. A. *petiolare* (Walp. Repert. 1, p. 632), rigide ramosum, sericeo-velutinum, stipulis minutis, foliolis obovato-oblongis petiolo rigido multo brevioribus, pedunculis unifloris petiolo brevioribus, calycis sericei labio inferiore tridentato, vexillo piloso.—*Chasmone petiolaris,* E. Mey.! Comm. p. 75.—*Crotalaria argentea,* Jacq. Hort. Schœnbr, 2, p. 50, t. 220.

Hills near Uitkomst in Clanwilliam district, *Drège !*

Jacquin's figure is a very good representation of this very distinct species, and the district where it was found by Drège, is one from whence many of the earlier cultivated Cape plants were introduced. Ecklon and Zeyher have however taken up Jacquin's name and synonym for a Swellendam plant to which they have given the name of *Argyrolobium argenteum.* Not having seen the latter plant myself, and no character being assigned to it by Ecklon and Zeyher, it is impossible to determine whether it be really the A. *petiolare* or not.

§ 5. *Pedunculares.* Suffrutices. Pedunculi elongati v. folio parum breviores, uni-pluri-flori.

16. A. *filiforme* (Eckl. et Zeyh. Enum. p. 186), tenuiter

sericeo-villosum, stipulis parvis subulatis, petiolis abbreviatis, foliolis linearibus convolutis, pedunculis folio brevioribus subumbellatim 2-4-floris, calycis sericeo-villosi labio inferiore tridentato, vexillo sericeo-villoso.—*Chasmone angustissima*, E. Mey.! Comm. p. 75. *Galega filiformis*, Thunb.? Fl. Cap. p. 600.

Neighbourhood of Cape Town: Paarlberg, *Drège!* Doornhoogde, *Ecklon and Zeyher*. Hottentots-Hollands Mountains, *Thunberg*.

17. A. *tenue* (Walp. Repert. 1, p. 632), tenuiter sericeo-villosum, stipulis parvis subulatis, petiolis brevibus, foliolis linearibus apiculatis convolutis inferioribus cuneato-oblongis, pedunculis folio brevioribus 1-2-floris, calycis sericeo-puberuli labio inferiore brevissime tridentato vexillo leguminibusque glabriusculis.—*Chasmone tenuis*, E. Mey.? Comm. p. 75, in adnot.—Suffrutex semipedalis, ramulis tenuibus teretibus. Petioli 1-2 lin. longi. Foliola 4-6 lin. longa, apice subuncinata, basi angustata, complicata v. convoluta, foliorum inferiorum breviora latiora. Pedunculi sæpius uniflori. Calyx 4 lin. longus. Corolla calyce parum longior. Legumen junius sericeum, maturum fere glabrum, 2 poll. longum, 2 lin. latum, basi longe angustatum.

Cape Colony, *Bowie!*

18. A. *pauciflorum* (Eckl. et Zeyh. Enum. p. 186).—Unknown to me, but from the character given is probably allied to A. *tenue* and A. *rupestre*, but distinct from both.

Amongst *Acaciæ* on the Stormberg near the sources of the Key River, *Ecklon and Zeyher*.

19. A. *rupestre* (Walp. Linnæa, 13, p. 508), diffusum? ramulis tenuibus sericeis, stipulis parvis ex ovata basi subulatis, foliis omnibus petiolatis, foliolis obovatis oblongisve subtus v. utrinque sericeis, pedunculis umbellatim subtrifloris folio 2-3-plo. longioribus, calycis sericei labio inferiore tridentato, vexillo sericeo.—*Chasmone rupestris*, E. Mey.! Comm. p. 74.

Rocky situations on the Stormberg, *Drège!*

20. A. *barbatum* (Walp. Repert. 2, p. 845.)—*Chasmone*

barbata, Meissn. supra v. 2, p. 77.—Unknown to me, but appears to be very nearly allied to A. *strictum* if not a mere variety.

Uitenhage on the banks of the Kouga River, *Krauss.*

21. A. *strictum* (Steud. Nom. Bot. ed. 2, v. 1, p. 130), diffusum v. suberectum, pilis longis sericeum, stipulis lineari-lanceolatis subulatisve subfalcatis, foliolis obovatis oblongis lanceolatisve longe pilosis, pedunculis folio 2-3-plo. longioribus 1-2-floris v. infimis rarius brevissimis, calycis pilosi labio inferiore tridentato, vexillo sericeo.—*Chasmone stricta,* E. Mey.! Comm. p. 75.—Foliola quam in A. *pumilo* majora, superiora angustiora. Stipulæ 3-4 lin. longæ.

Near Graham's Town, and to the northward on the Mooze River and Caledon River, *Burke!* between the Klipplaat and Black Kei Rivers, *Drège!* also *Burchell!* n. 5035, and indicated by Drège near Zwartbastkraal to the north of the Cape district, but these specimens, which I have not seen, may possibly belong to some other species.

22. A. *pumilum* (Eckl. et Zeyh. Enum. p. 185), humile, ramosissimum, stipulis parvis ex ovata v. lanceolata basi subulatis, foliis petiolatis v. superioribus subsessilibus, foliolis obovatis v. obovato-oblongis, pedunculis 1-2-floris folio brevioribus longioribusve, floribus infimis raro subsessilibus, calycis sericei labio inferiore tridentato, vexillo sericeo, legumine sericeo-villoso.—Variat: 1, foliolis supra glabris.—*Chasmone pumila,* Meissn. supra, v. 2, p. 77;—2, foliolis utrinque pilosis.—*Chasmone argentea β pilosa,* E. Mey.! Comm. p. 75;—3, biflorum.—*Argyrolobium venustum,* Eckl. et Zeyh. Enum. p. 185;—4, erectiusculum, rigide ramosissimum.

The above appear to me to be mere forms of a very variable species, of some of them however the specimens I have seen are not very satisfactory. Of *Chasmone argentea α,* E. Mey. I have but a very bad specimen with apetalous flowers only, it may possibly belong to the same species, but, from E. Meyer's having adduced the European *Cytisus argenteus* as a synonym, it is probable that he included in his

Chasmone argentea the A. *lanceolatum* which is the only Cape species known to me with the pod of the European ones.

Uitenhage and neighbouring districts to the Gekau and Basche Rivers to the eastward, and Nieuweveld and Camdeboo to the northward, *Ecklon and Zeyher! Drège!* etc., also *Burchell!* n. 3491, and the *Gœritzhoogde, Mundt!*

23. A. *biflorum* (Eckl. et Zeyh. Enum. p. 186).—Unknown to me, probably a variety of A. *pumilum.*

Sides of the Winterberg near Philipstown, *Ecklon and Zeyher.*

24. A. *patens* (Eckl. et Zeyh. Enum. p. 185), pumilum, ramosissimum, stipulis parvis ex ovata v. lanceolata basi subulatis, foliis subsessilibus foliolis cuneato-oblongis v. infimis obovatis plerisque acutis rigidulis venosis subtus cauleque tenuiter sericeis, pedunculis folio paullo longioribus unifloris, calycis sericei labio inferiore tridentato, vexillo sericeo.

Cape Colony, *Bowie!* Uitenhage, in grassy pastures on the Zwartkop River, *Ecklon and Zeyher!*

25. A. *molle* (Eckl. et Zeyh.! Enum. p. 187), laxe sericeo-pilosum, ramis adscendentibus, stipulis lineari- v. subulato-lanceolatis petiolo brevi longioribus, foliolis obovatis oblongisve venosis, pedunculis folio pluries longioribus umbellatim 3-5-floris, calycis labio inferiore fere ad medium trifido, vexillo sericeo.—*Chasmone venosa,* E. Mey.! Comm. p. 73.—This and the preceding species are remarkable for their strongly veined leaves. *Chasmone venosa β obscura* of E. Mey. from a poor specimen I have seen, appears to be a distinct species.

Albany, *Drège!* on the Winterberg, *Ecklon and Zeyher!*

26. A. *adscendens* (Walp. Linnæa, 13, p. 507), sericeo-pilosum, ramis elongatis adscendentibus, stipulis parvis ovatis acutis, petiolo brevissimo, foliolis ovatis ellipticisve subaveniis sericeo-marginatis, pedunculis folio pluries longioribus umbellatim 1-3-floris, calycis labio inferiore profunde tridentato.—*Chasmone adscendens,* E. Mey.! Comm. p. 73.—It appears that in some collections the A. *lanceolatum* has by mistake been also sent under this name.

Cafferland, between the Omcomas and the Omblas, *Drège!*

27. A. *splendens* (Walp. Repert. 2, p. 845).—*Chasmone splendens*, Meissn. supra, v. 2, p. 78.—This plant appears to approach on the one hand the A. *adscendens*, on the other the A. *lanceolatum*. I have seen a small fragment which answers to Meissner's description, except that the stipules are much smaller.

On the Klein River mountains in Swellendam, *Krauss;* Zuureveld, *Gill!*

28. A. *pedunculare* (sp. n.), laxe ramosum, sericeo-pilosum, stipulis lineari-subulatis subfalcatis, foliolis ovato-ellipticis subsericeo-marginatis aveniis lateralibus petiolo subbrevioribus, pedunculo longissimo unifloro, calycis labio inferiore tridentato, vexillo sericeo.—Habitus fere A. *Andrewsiani*. Ramuli tenues, elongati, paucifoliati. Stipulæ 2-3 lin. longæ, petioli 6-12 lin. Foliola in foliis majoribus lateralia 6-9 lin. longa, 4-5 lin. lata, terminale fere pollicare, foliorum inferiorum minora, obovato-orbicularia, omnia utrinque pilis longis laxis hirsuta et pube brevi dense appressa marginata. Pedunculus in specimine 8-pollicaris, bracteola parva subulata auctus. Calyx 4 lin. longus. Vexillum calyce subduplo longius. Alæ glabræ calycem paullo excedentes. Carina obtusa.

Madagascar. *Lyall!*

29. A. *Andrewsianum* (Steud. Nom. Bot. ed. 2, v. 1, p. 189), laxe ramosum, subsericco-hirtum, stipulis subulatis, foliolis ovatis sericeo-marginatis petiolo brevioribus, racemis longe pedunculatis fasciculatim multifloris, calycis labio inferiore demum semitrifido, vexillo sericeo.—*Cytisus tomentosus*, Andr. Bot. Reg. t. 237. *Goodia? polysperma*, DC. Prodr. 2, p. 118. *Dichilus ciliatus*, E. Mey.? Linnæa, 7, p. 154. *Chasmone Audrewsiana*, E. Mey.! Comm. p. 74. *Trichasma ciliatum*, Walp. Linnæa, 13, p. 411.—Variat pedunculis brevioribus subumbellatim 2-3-floris.

In various situations from Uitenhage to Port Natal, *Drège! Ecklon and Zeyher! Bowie! Burchell!* n. 3213, etc.

Sect. II. Eremolobium. Legumen valde compressum, subtorulosum, intus intersemina transverse septatum.—

Species pleræque regionis Mediterraneæ v. Asiaticæ, unica Austro-Africana.

30. A. *lanceolatum* (Eckl. et Zeyh.! Enum. p. 186), suffruticosum, decumbens, incano-sericeum, stipulis falcato-lanceolatis, foliis petiolatis, infimorum foliolis obovatis, superiorum lanceolatis pilosis subtus argenteis pedunculis elongatis 1-3-floris.—*Crotalaria lunaris*, Linn. Spec. p. 1005. *Ononis sericea*, Thunb.? Fl. Cap. p. 586. *Ononis heterophylla*, Thunb.? l. c. *Dichilus lanceolatus*, E. Mey.! Linnæa, 7, p. 154. *Chasmone lanceolata*, E. Mey.! Comm. p. 75. *Diotolotus Eckloni*, Tausch? Flora, 1842, 1, p. 284.

Mountains about Cape Town and the neighbouring districts, *Ecklon and Zeyher! Drège!* and others.

The following species do not all strictly come in within the limits of the present enumeration, but are mentioned here to complete the list of the known species of this genus. They are mostly described with considerable detail by Spach, in whose paper, quoted below, there will also be found the synonyms not here repeated.

31. A. *Linnæanum* (Walp.!—Jaub. et Spach.! Ann. Sc. Nat. Par. 2e Sér. v. 19, p. 44).

South Europe.

32. A. *calycinium* (Jaub. et Spach.! l. c. p. 44).

Asia Minor, Caucasus, North Persia.

33. A. *crotalarioides* (Jaub. et Spach.! l. c. p. 43, Illustr. t. 59). A. *syriacum*, Boiss. Diagn. Pl. Nov. Or. fasc. 2, p. 13. A. *gracile*, Fenzl, Flora 1843, p. 394.

Syria.

34. A *uniflorum* (Jaub. et Spach.! l. c. p. 45).

Arabia Petræa.

35. A. *Arabicum* (Jaub. et Spach.! l. c. p. p. 46).

Arabia Felix.

36. A. *Bottæ* (Jaub. et Spach. l. c. p. 47).—Perhaps not distinct from A. *Arabicum*.

Arabia Felix.

37. A. *Abyssinicum* (Jaub. et Spach.! l. c. p. 48).

Abyssinia.

38. A. *flaccidum* (Jaub. et Spach. ! l. c. p. 48).—A. *divaricatum*, Jaub. et Spach. l. c. p. 49.—Very variable as to size, pubescence and breadth of leaflets.

Common in the Himalayas at an elevation of from 3,000 to 9,000 feet, *M. P. Edgeworth !* Affghanistan, *Griffith !* n. 1179. Kunawur and Mussooree, *Royle !* Sutledge, *Jacquemont !* Kamaon, *Blinkworth !* in Wall. Cat. Herb. Ind. n. 5517.

39. A. *trigonelloides* (Jaub. et Spach. ! l. c. p. 50).—A. *prostratum*, Boiss. Diagn. Pl. Or. fasc, 2, p. 13.

Assyria and Persia.

40. A. *roseum* (Jaub. et Spach. ! l. c. p. 51).—A. *ornithopodioides*, Jaub. et Spach. ! l. c.

In the Punjaub, *Jacquemont !* on the Persian Gulf, *Aucher-Eloy*, n. 971.

XXII. MELOLOBIUM, *Eckl. et Zeyh.—Sphingium, E. Mey.*

This is a very natural genus, easily known by the habit, something like that of our prickly *Ononides*, the usually glandular pubescence and the character given above. The flowers are like those of some of the smaller flowered *Lotononides*, the pod nearly that of the section *Eremolobium* of *Argyrolobium*, but usually much falcate and more or less glandular. The species known are all South African, and chiefly from the Eastern districts of Cape Colony, and from thence to the northward, two or three from the Cape district are scarcely spinescent.

1. M. *calycinum* (sp. n.), divaricato-ramosissimum, spinescens, vix glandulosum, ramulis pubescenti-hirtis, foliolis glabriusculis, stipulis semicordatis petiolum æquantibus, bracteis calycis tubum superantibus, calycibus villosis corollam æquantibus, legumine villoso.—Rami duri, flexuosi, intricato-ramosissimi, ramulis spinescentibus numerosissimis. Stipulæ foliaceæ, acutissimæ, pleræque 2 lin. longæ. Petioli breves. Foliola cuneato-linearia v. rarius obovata, in sicco complicata, 2-3 lin. longa, tenuiter punctata. Racemi basi 1-3-flori, apice spinescentes nudi. Bracteæ stipulæformes, superiores paucæ steriles.

Sand River, *Burke !*

2. M. *candicans* (Eckl. et Zeyh. ! Enum. p. 189), divaricato-ramosissimum, spinescens, vix glandulosum, ramulis canescenti-velutinis, foliolis glabriusculis, stipulis bracteisque semicordato-ovatis, legumine rectiusculo 4-6-spermo calyceque villosis vix glandulosis.—*Dichilus candicans*, E. Mey. Linnæa, 7, p. 154. *Sphingium velutinum*, E. Mey. ! Comm. p. 67. *Melolobium squarrosum*, Eckl. et Zeyh. ? Enum. p. 189.

Uitenhage, *Ecklon and Zeyher !* Sneeuwbergen and Uitvlugt, *Drège !* also *Bowie !* and *Burchell !* n. 1555.

3. M. *canescens*, divaricato-ramosissimum, spinescens, vix glandulosum, ramulis canescenti-velutinis, stipulis bracteisque semicordatis minutis, legumine valde curvato 4-6-spermo calyceque sericeis vix glandulosis.—*Sphingium canescens*, E. Mey. ! Comm. p. 67.

Near Rhinoster Kop, *Drège !* Gamka River, *Burke !*

4. M. *parviflorum* (sp. n.), divaricato-ramosissimum, spinescens, vix glandulosum, subglabrum, stipulis bracteisque semicordatis minutis, calyce glabriusculo viscidulo.—Perhaps a variety of M. *canescens*, but, with the exception of a slight hoariness on the young shoots and branches, it is generally smooth. The pod is unknown to me.

Dwaka River, *Burke !*

5. M. *microphyllum* (Eckl. et Zeyh. Enum. p. 189), spinescens, glanduloso-scabrum, stipulis bracteisque semicordato-ovatis, legumine rectiusculo v. subincurvo 2-4-spermo glanduloso-scabro. — *Ononis microphylla*, Thunb. Fl. Cap. p. 585. *Dichilus microphyllus*, E. Mey. Linnæa, 7, p. 155, *Sphingium microphyllum*, E. Mey. ! Comm. p. 67.

Between the Sondag and Fish Rivers, *Thunberg*; on the Sondag River in Karroid places near Graafreynet, *Ecklon and Zeyher !* Sneeuwbergen and Camdeboosberg, *Drège !* South Africa, *Burchell !* n. 1204, 1555, 2133, 2146 and 2226. Indicated also by *Drège*, between the Omsamcaba and the Omsamwubo.

6. M. *collinum* (Eckl. et Zeyh. ! Enum. p. 189), decumbens, glanduloso-scabrum, hinc inde spinescens, foliolis cu-

neato-oblongis glabriusculis, bracteis brevissimis, legumine arcuato 4-6-spermo glanduloso-scabro pilosulo v. nitido.—*Sphingium lampolobum*, E. Mey.! Comm. p. 66.

Dry hills at Kendo, *Drège!* on the Gauritz River, *Ecklon and Zeyher!*

7. M. *decumbens*, spinosum, pubescenti-hispidum, glandulosum, stipulis semicordato-lanceolatis, foliolis hispidis, bracteis calycis tubum subæquantibus, legumine subfalcato 2-3-spermo calyceque glanduloso-hispidis.—*Sphingium decumbens*, E. Mey.! Comm. p. 67.

Sneeuwbergen, Nieuweveldsbergen near Graafreynet, near Schiloh, *Drège!*

The three preceding species are very near to each other, and may possibly be mere varieties of each other.

8. M. *adenodes* (Eckl. et Zeyh. Enum. p. 190).—Unknown to me, perhaps a slightly spinescent form of M. *spicatum*, or of M. *cernuum*.

Cape district; between the Berg River and the Zwarteland, *Ecklon and Zeyher.*

9. M. *spicatum* (Eckl. et Zeyh.! Enum. p. 190), inerme, pubescenti-hirtum, viscidulum, stipulis semicordato-lanceolatis, foliolis cuneato-oblongis hirtis, floribus longiuscule spicatis, bracteis ovato-lanceolatis calycis tubum æquantibus, legumine rectiusculo hispido.—*Dichilus spicatus*, E. Mey.! Linnæa, 7, p. 154. *Sphingium spicatum*, E. Mey. Comm. p. 66.

Cape and neighbouring districts, *Ecklon and Zeyher! Drège!*

10. M. *cernuum* (Eckl. et Zeyh. Enum. p. 190), inerme, molliter incano-velutinum, subsericeum, stipulis semicordatis lanceolatis, foliolis cuneato-oblongis linearibusve, floribus longiuscule spicatis, bracteis ovatis calycis tubum æquantibus, legumine reflexo arcuato 3-6-spermo villoso—*Cytisus Æthiopicus*, Linn.! Spec. p. 1042. *Ononis cernua*, Linn. Spec. p. 1011.

Cape district, *Ecklon and Zeyher, Burchell!* n. 1610 and 2169.

11. M. *viscidulum* (Steud. Nom. Bot. ed. 2, v. 2. p. 123).

—*Sphingium viscidulum*, E. Mey. Comm. p. 66.—Unknown to me; referred by Walpers to M. *cernuum*, but appears to be nearer to M. *spicatum*, if not a good species.

Cape district, near Ebenezer, *Drège*.

12. M. *humile* (Eckl. et Zeyh. Enum. p. 190).

Sands near Brackfontein in Clanwilliam, *Ecklon and Zeyher*.

13. M. *alpinum* (Eckl. et Zeyh. Enum. p. 190).

On the Winterberg, *Ecklon and Zeyher*.

14. M. *canaliculatum*.—*Sphingium canaliculatum*, E. Mey. Comm. p. 66. Referred by Walpers to M. *alpinum*, but the two descriptions do not agree.

Karroo, *Drège*.

XXIII. DICHILUS, *DC.* — *Calycotome, E. Mey.* — *Melinospermum, Walp.*

This genus has the calyx nearly of *Argyrolobium*, and the pod of the second section of that genus, with the large carina and stamens of *Lebeckia* and *Viborgia*, with which genera it is also associated in habit. *Calycotome* of E. Mey. was by mistake supposed to have diadelphous stamens and placed amongst *Galegeæ*, but, in my specimen at least, they are decidedly monadelphous, and all the characters as well as the foliage and habit are so precisely those of *Dichilus* that I have no hesitation in considering it as a congener. The species of *Dichilus* are all from the N. E. district of the Cape Colony.

1. D. *striatus* (E. Mey.! Comm. p. 36), ramulis suberectis, foliis omnibus alternis, foliolis linearibus, racemis terminalibus 1-3-floris subpaniculatis, calyce vix ad medium bilabiato alis dimidio breviore, dentibus breviter ovatis.

On the Witbergen, *Drège!*

2. D. *lebbekioides* (DC.! Leg. Mem. p. 202, t. 35), ramulis suberectis, foliis omnibus alternis, foliolis linearibus, racemis terminalibus 1-3-floris subpaniculatis, calyce ultra medium bilabiato alis paullo breviore, dentibus lanceolatis acuminatis.

South Africa, *Burchell!* n. 2614; Macalisberg, *Burke!*

3. D. *pusillus*, ramulis tenuibus patentibus, foliis floralibus plerisque oppositis, foliolis cuneato-oblongis, pedunculis brevibus filiformibus 1-2-floris, calyce profunde bilabiato, dentibus lanceolatis.—*Calycotome pusilla*, E. Mey.! Comm. p. 113, excl. syn.—This plant differs only from D. *gracilis* by the narrower leaflets, and perhaps smaller flowers. Thunberg's description of *Galega pusilla*, supposed by E. Meyer to belong to this species, appears to me to refer to something very different, but it is impossible to guess at it with any accuracy when its generic characters are not otherwise known than as being comprised in the same genus with species now known to be severally referrible to the *Podalyrieæ*, *Genisteæ*, *Galegeæ* and *Phaseoleæ*.

Steelkloof in the Nieuweveld, *Drège!*

4. D. *gracilis* (Eckl. et Zeyh.! Enum. p. 183), ramulis tenuibus patentibus, foliis floralibus plerisque oppositis, foliolis obovatis, pedunculis brevibus filiformibus 1-2-floris, calyce profunde bilabiato alis paullo breviore, dentibus lanceolatis acuminatis.—D. *patens*, E. Mey.! Comm. p. 36.—The peduncles in this and the preceding species are terminal between the two last leaves, which are opposite. When the axillary buds of both these leaves are developed, the peduncle remains within the consequent bifurcation of the stem, but when, as is more frequently the case, one axillary bud only is lengthened out, the flower appears to be placed in the axilla of the opposite leaf. The peduncle is usually uniflorous but articulated and bearing a small bractea above the middle, in the axilla of which a second flower is sometimes produced.

Cape Colony, *Bowie!* on the Fish River, *Drège!* on the Chumiberg and near Fort Beaufort on the Kat River, *Ecklon and Zeyher!*

D. *hypotrichum*, Spreng. Syst. Cur. Post. p. 273, is a mere puzzle, probably some *Phaseoleous* plant.

XXIV. Hypocalyptus, *Thunb.*

1. H. *obcordatus* (Thunb.—DC. Prod. 2, p. 135).—Bot.

Mag. t. 3894.—Variat caule arboreo v. fruticoso, foliolis obovatis acuminatis v. profunde obcordatis.

Mountain range from the Cederbergen to Kochmans Kloof in Swellendam, *Ecklon and Zeyher! Drège! Scholl!* and others.

XXV. Loddigesia, *Sims.*

1. L. *oxalidifolia* (Sims.—DC. Prodr. 2, p. 136.)

Mountains of Swellendam and George districts, *Ecklon and Zeyher! Drège! Burchell!* n. 5751, etc.

XXVI. Lebeckia, *Thunb.—Stiza, Lebeckia et Sarcophyllum, E. Mey. — Acanthobotrya, Calobota et Lebeckia, Ecklon et Zeyh.*

The several groups which I have retained under the common name of *Lebeckia,* differ considerably from each other either in habit or in the form of the pod, but the distinctions drawn from one of these characters do not correspond with those furnished by the other. The genera established by Ecklon and Zeyher have not the characters assigned to them, those of E. Meyer are better defined, but appear to require modification even for adoption as sections. Walpers has joined them all except *Sarcophyllum, E. Mey.*, but has given no character, and has divided them chiefly according to foliage, without reference to the really striking distinctions afforded by the pod. I have followed him in uniting them, but have added E. Meyer's *Sarcophyllum,* and have endeavoured to limit the sections by the form of the carina and of the pod.

Sect I. Stiza. Carina vexillo longior. Legumen planum. —Fruticuli rigide ramosissimi, habitu *Colletiis, Erinaceis* v. *Genistis* nonnullis similes. Ramuli apice spinescentes. Folia perpauca, sæpissime parva, unifoliolata. Flores sub apice ramulorum spinosorum racemosi.

This corresponds to E. Meyer's *Stiza,* and is included with several very different plants in Ecklon and Zeyher's *Acanthobotrya.* It has the fruit nearly of *Dichilus,* the flowers of *Viborgia,* with a peculiar habit.

1. L. *pungens* (Thunb. Fl. Cap. p. 561), ramosissimum apice tomentoso-pubescens, ramis spinescentibus, foliis raris unifoliolatis obovatis oblongisve, legumine albo tomentoso.—*Stiza erioloba,* E. Mey.! Comm. p. 31.

Foot of the Great Zwartebergen near Klaarstroom, *Drège!* Oliphant's River and Kannaland, *Thunberg.*

2, L. *psiloloba* (Walp. Linnæa, 13, p. 478), ramosissima, glabra, ramis spinescentibus, foliis raris plerisque unifoliolatis obovatis oblongisve, legumine membranaceo glaberrimo. *Stiza psiloloba,* E. Mey.! Comm. p. 32. *Acanthobotrya pungens,* Eckl. et Zeyh.! Enum. p. 193 (saltem in herb. plur.) *Spartium cuspidosum,* Burch. voy. 1, p. 348. *Genista cuspidosa,* DC. Prodr. 2, p. 147.

Uitenhage district, *Ecklon and Zeyher!* also in *Drège's!* and other collections with doubtful stations.

Sect. II. *Phyllodiastrum.* Carina acuta v. subrostrata vexillo brevior. Legumen planum.—Suffrutices v. herbæ perennes. Folia filiformia, continua (simplicia, phyllodinea) v. articulata (unifoliolata, foliolo petiolo conformi). Racemi elongati, sæpius multiflori.

This is E. Meyer's *Sarcophyllum* with the addition of L. *Plukenetiana* which has a flat pod. It is certainly however not Thunberg's *Sarcophyllum,* whose "Legumen acinaciforme, acutum" and "Folia fasciculato-terna, sessilia, linearia, incurva," evidently apply to a species of *Aspalathus.*

3. L. *Plukenetiana* (E. Mey! Comm. p. 33, excl. syn. Lam. et Willd.), glabra, foliis filiformibus secundis adultis reflexis continuis v. rarius obscure articulatis, racemis secundis multifloris, legumine sessili plano falcato, sutura superiore marginata, valvulis membranaceis.

Cape Colony, *Scholl! Mundt!* Hex River, *Drège!*

4. L. *pauciflora* (Eckl. et Zeyh. Enum. p. 192), glabra, foliis remotis filiformibus secundis continuis v. rarius obscure articulatis, racemis longipedunculatis remote paucifloris, le-

gumine sessili?—*Sarcophyllum carnosum litt. f.* E. Mey.! Comm. p. 32.

Cape Colony, *Bowie! Burchell!* n. 5942; Dutoitskloof, *Drège!* Houwhoeck and Langekloof, *Ecklon and Zeyher.*

5. L. *contaminata* (Thunb. Fl. Cap. p. 561), glabra, foliis subulatis crassiusculis secundis distincte articulatis, racemis paucifloris, calycis laciniis acutis tubo vix æqualibus, legumine longe stipitato plano falcato, sutura superiore marginata, valvulis submembranaceis.—*Spartium contaminatum,* Linn.! Mant. p. 268. *Sarcophyllum carnosum,* E. Mey.! Comm. p. 32, excl. litt. f. et syn. Thunb. *Lebeckia Meyeriana,* Eckl. et Zeyh. Enum. p. 192. *Lebeckia Candolleana,* Walp. Repert. 1, p. 607.

Cape and neighbouring districts, *Drège! Ecklon and Zeyher, Burchell!* n. 7585 and others.

6. L. *grandiflora,* glabra, foliis subulatis erectis articulatis, racemis multifloris, calycis laciniis acuminatis tubo longioribus, legumine subsessili plano subfalcato, sutura superiore angustissime marginata.—*Sarcophyllum grandiflorum,* E. Mey. Comm. p. 32.

Cape Colony, *Bowie!* Clanwilliam district, *Drège!*

Sect. III. Eulebeckia. Carina acuta v. subrostrata, alas et vexillum superans. Legumen teres.—Suffrutices habitu *Phyllodiastri.*

This with the preceding section form Ecklon and Zeyher's *Lebeckia,* limited by appearance alone, without any reference to the character given, which is at variance with most of the species. E. Meyer's *Lebeckia,* consists of this and the following section with the addition of L. *Plukenetiana,* of which he did not know the pod.

7. L. *sepiaria* (Thunb. Fl. Cap. p. 561), glaucescens, foliis erectis filiformibus sparsis articulatis, racemo elongato multifloro, rachi sulcata, floribus amplis, leguminibus declinatis.—*Spartium sepiarium,* Linn.! Spec. p. 995.—*Sarcophyllum carnosum,* Sims, Bot. Mag. t. 2502 (forma hortensis monstruosa, racemis apice foliiferis) non Thunb. *Lebeckia Simsiana,* Eckl. et Zeyh! Enum. p. 192. L. *sarcophylloides,* E. Mey.

Linnæa, 7, p. 155. L. *contaminata,* E. Mey.! Comm. p. 34, non Thunb.—Flores 6 lin. longi.

Common in Cape and Stellenbosch districts, extending to the Breede River in Swellendam, *Drège! Ecklon and Zeyher! Mundt!* and others.

8. L. *gracilis* (Eckl. et Zeyh.! Enum. p. 192), glaucescens, foliis erectis filiformibus sparsis articulatis, racemo breve-pedunculato denso multifloro, rachi sulcata, floribus parvis, leguminibus declinatis.—L. *ambigua litt. c.* E. Mey.? Comm. p. 34.—Flores vix 3 lin. longi.

Uitenhage district, *Ecklon and Zeyher!* also *Burchell!* n. 5618.

9. L. *ambigua,* (E. Mey.! Comm. p. 34, excl. litt. c.), glaucescens, foliis erectis filiformibus sparsis articulatis, racemo laxo elongato, rachi lævi, floribus mediocribus, leguminibus gracilibus erectiusculis subtorulosis.—Flores 4 lin. longi.

Near Saldanha Bay and near Uienvalley in Clanwilliam district, *Drège!*

Sect. IV. CALOBOTA. Carina obtusa alas sæpius superans, vexillum æquans v. superans. Legumen teres v. turgidum.—Suffrutices v. frutices plus minus canescentes. Folia trifoliolata v. rarius simplicia.

This comprehends E. Meyer's § 3 of *Lebeckia* with his L. *linearifolia.* The species are distributed by Ecklon and Zeyher between *Calobota* and *Acanthobotrya,* without however having the characters attributed to the latter.

§ 1. *Simplicifoliæ.*

10. L. *linearifolia* (E. Mey.! Comm. p. 33), incano-pubescens, foliis linearibus canaliculatis basi angustatis continuis, calyce quinquedentato petalisque extus sericeis, legumine teretiusculo tenuiter sericeo.

On the Gariep near Verlept praam, *Drège!*

11? L. *subnuda* (DC. Prodr. 2, p. 136). Unknown to me, referred by Ecklon and Zeyher with doubt to L. *pungens,* but from De Candolle's character it does not appear spinescent. The pod is unknown.

§ 2. *Glabrifloræ.* Inermes. Folia trifoliolata. Petala glabra.

12. L. *mucronata*, inermis, junior adpresse pubescens demum glabrata, foliis petiolatis, foliolis cuneato-oblongis sublinearibusve mucronatis glabris v. subtus vix puberulis, racemis multifloris, calyce late et acute dentato puberulo, legumine subtereti acuto glaberrimo.—*Acanthobotrya decumbens*, Eckl. et Zeyh.? Enum. p. 193, excl. Syn. Thunb.—Ramuli sulcati. Foliola 4-6 lin. longa, lateralia minora. Pedicelli calyce dimidio breviores. Flores magnitudine L. *armatæ*.

Uitenhage, *Zeyher !* n. 344.

13. L. *leptophylla* (sp. n. glabra, inermis, foliolis anguste linearibus, racemo elongato, calycelato breviter dentato, petalis glabris, legumine compresso demum subturgido glaberrimo.

Grassy subalpine situations near Swellendam, *Mundt !*

§ 3. *Inermes*. Folia trifoliolata, foliolis obtusis. Vexillum et carina apice sericea.

14. L. *cinerea* (E. Mey.! Comm. p. 35) subtomentoso-v. sericeo-canescens, ramis rigidis, foliis raris, foliolis oblongo-cuneatis, racemis paucifloris, calyce tubuloso-campanulato sericeo dentibus latis acutis, legumine tereti sericeo.—*Acanthobotrya sericea*, Eckl. et Zeyh. Enum. p. 193. This synonym is referred by Walpers to L. *microphylla*, but both the description and the station appear to me to agree better with L. *cinerea*.

Hills near Noagas, and near Aris on the Gariep, *Drège !*; near Brackfontein in Clanwilliam, *Ecklon and Zeyher*.

15? L. *densa* (Thunb. Fl. Cap. p. 562) from De Candolle's character and Thunberg's description, appears to be very near L. *cinerea*; indeed the two may not improbably be but one species which in that case would retain Thunberg's name.

16. L. *marginata* (E. Mey. Comm. p. 35.) Unknown to me.

Namaqua country.

17. L. *cytisoides* (Thunb. Fl. Cap. p. 562), sericeo-canescens, foliolis subcuneato-oblongis, racemis laxis grandifloris, calyce amplo subcolorato glabro, dentibus obtusiusculis pu-

berulis, vexillo carinaque extus apice sericeis, legumine subtereti glabro intus tenuiter septato.—*Crotalaria pulchella*, Andr. Bot. Rep. t. 417; Sims, Bot. Mag. t. 1699. *Calobota cytisoides* et C. *pulchella*, Eckl. et Zeyh.! Enum. p. 191.—The two supposed species do not in the slightest degree differ from each other.

Cape, Stellenbosch and Swellendam districts; *Drège! Ecklon* and *Zeyher! Burchell!* n. 7475, and in many other collections.

18. L. *sericea* (Thunb. Fl. Cap. p. 562) sericeo-canescens, foliolis lineari-oblongis subcuneatisve, racemo secundo multifloro, calyce amplo puberulo, dentibus breviter subulatis sinubus latis, vexillo carinaque apice sericeis, legumine subtereti sericeo.—*Spartium sericeum*, Ait. Hort. Kew. 3, p. 12. *Lebeckia decipiens*, E. Mey.! Comm. p. 35. L. *flexuosa*, E. Mey.! Comm. p. 34. *Crotataria angustifolia*, Jacq. Hort. Schœnb. t. 219.

Karroo, near Mierenkasteel; rocks on the Kwek river. Zilverfontein and Platberg, *Drège!*

19. L. *multiflora* (E. Mey.! Comm. p. 34) sericeo-canescens, foliolis anguste linearibus, racemo secundo multifloro, calycibus tubuloso-campanulatis dentibus basi latis acutiusculis, vexillo carinaque apice parce sericeis rarius glabratis, legumine tenuiter sericeo demum subtereti.—L. *decutiens* et L. *canescens*, E. Mey.! l. c.

Mouths of the Gariep, Olifants river, and between Holriver and Mierenkasteel, *Drège!*

This species is very near the following, and possibly both may be mere varieties of L. *sericea*.

20. L. *angustifolia* (E. Mey. Linnæa. 7, p. 155) tenuiter sericeo-pubescens v. demum glabratum, foliolis anguste linearibus, racemo laxo elongato, calycibus tubuloso-campanulatis subglabris dentibus basi latis acutiusculis, vexillo carinaque apice parce sericeis glabratisve, legumine subtereti glaberrimo.—*Acanthobotrya angustifolia*. Eckl. et Zeyh. Enum. p. 194. *Lebeckia decutiens*, *β glabrata*, E. Mey.! Comm. p. 34.

Karroo, between Goedmanskraal and Kaus, *Drège!* Sands between Bergriver and Zwarteland, *Ecklon and Zeyher.*

§ 4. *Armatæ.* Fruticuli aspalathoidei, ramulis rigidis spinescentibus.

21. L. *microphylla* (E. Mey.! Comm. p. 155) sericeo-canescens, ramulis rigidis demum subspinescentibus, petiolo brevi, foliolis parvis lineari-obovatis oblongisve complicatis, vexillo ad apicem parce pubescente, legumine hirsuto.—*Aspalathus cœrulescens,* E. Mey.! Comm. p. 54. *Krebsia argentea,* Eckl. Zeyh. Enum. p. 179.

Rocky situations on the Camdeboosberg and Klein Bruintjeshoogte, *Drège!* near the Klipplaat river, *Drège! Ecklon and Zeyher.*

β? leptophylla, E. Mey. l. c.

Near Graafreynet, and on the Los Tafelberg, *Drège.*

22. L. *armata* (Thunb.? Fl. Cap. p. 562) spinescens, sericeo-canescens v. demum glabriuscula, foliis longiuscule petiolatis, foliolis parvis oblongo-cuneatis linearibusve complicatis canescenti-puberulis, calyce tubuloso, vexillo apice sericeo, legumine subtereti glabriusculo. — *Acanthobotrya armata* et *A. disticha,* Ecklon et Zeyh.? Enum. p. 193.—The synonymy of this species is very doubtful.

Rocks of Driekoppe, *Drège!* Dwaka river, *Burke!*; n. 1965 of *Burchell's!* Catalogue, and perhaps mountains of Grœnekloof, *Ecklon and Zeyher.*

Sect. 5. *Viborgioides.* Carina subrostrata, alas vix superans. Legumen teres v. turgidum.—Frutices rigidi, foliis brevepetiolatis sessilibusve trifoliolatis, a *Viborgiis* nonnisi fructu distinguendi.

The species of this section can scarcely be distinguished from *Viborgia* except by the pod, which is usually more turgid even than in the other *Lebeckiæ;* they thus approach very near in character as well as in habit to the *Crotalaria aspalathoides.*

23. L. *fasciculata* (sp. n.), subglabra, rigide ramosissima, foliis subsessilibus subfasciculatis, foliolis parvis cuneato-oblongis acutis emarginatisve, racemis brevibus laxiusculis,

calyce breviter 5-dentato, legumine sessili turgido glaberrimo. —Fruticulus siccitate nigricans, ramulis quàm in sequentibus minus robustis. Petioli brevissimi, basi incrassati, post folia delapsa sæpe persistentes squamæformes. Foliola 1-3 lin. longa, glaberrima. Racemi 1-3-pollicares. Bracteæ et bracteolæ subulatæ, lineam longæ, deciduæ. Pedicelliis subbreviores. Calyx 1 lin. longus, valde obliquus. Petalorum ungues exserti. Legumen 6-8 lin. longum, intus nudum, polyspermum.

Cape Colony, *Bowie !*

24. L. *sessilifolia,* rigide ramosissima, ramulis sericeo-pubescentibus, foliis brevissime petiolatis, foliolis obovato- v. cuneato-oblongis crassiusculis, racemis brevibus densis secundis, calycibus late tubulosis, dentibus lanceolatis tubo paullo brevioribus, legumine sessili oblongo acuto turgido glabriusculo.—*Acanthobotrya sessilifolia,* Eckl. et Zeyh. Enum. p. 193. *Viborgia grandiflora,* E. Mey. Comm, p. 31. —Frutex ramis robustis, ramulis numerosis brevibus rigidis demnm subdenudatis at vix spinescentibus. Petioli ut in L. *fasciculata,* basi persistentes squamæformes. Foliola in specimine Mundtiano 2-3 lin. longa, testibus Eckl. et Zeyh. necnon E. Meyero paullo longiora, crassiora quàm in affinibus. Racemi vix pollicares, 6-8 flori. Bracteæ 1-2 lin. longæ, lanceolatæ, cito deciduæ. Calyx 4-lin. longus, subcoloratus. Petala glabriuscula, unguibus quam calycis dentes brevioribus. *Carina* brevissime et obtuse rostrata. Legumen nondum maturum semipollicare.

Near Caledon, *Mundt !* between Breede River and Duyvelshoek, *Ecklon and Zeyher.*

25. L. *Bowieana* (sp. n.), ramis rigidis sericeo-pubescentibus, foliis subsessilibus subfasciculatis, foliolis parvis cuneato-oblongis obovatisve utrinque dense canescenti-pubescentibus, racemis abbreviatis paucifloris, calyce laxe tubuloso glaberrimo breviter 5-dentato, legumine sessili oblongo acuto turgido glaberrimo.—Frutex ramis subvirgatis, ramulis brevibus dense foliatis, nonnullis demum denudatis at vix spinescentibus. Petioli L. *fasciculatæ.* Flores ad apices ramulorum

1-3, nutantes. Bracteæ subulatæ, deciduæ. Calyx siccitate nigricans, 1-2 lin. longus. Petala glabra, unguibus breviter exsertis. Carina brevissime rostrata, obtusa. Legumen junius in specimine jam valde turgidum.

Cape Colony, *Bowie !*

L. *humilis,* Thunb. and L. *linearis,* D.C. are very doubtful, their generic characters being insufficiently described.

XXVII. VIBORGIA, *Thunb.*

This genus, as at present defined, is readily known by its short, stipitate, winged fruit, and these characters, at least the stipes and the wing, may be seen in the ovary as soon as the flower begins to fade: but the synonymy of the species is difficult. The genus was originally established by Thunberg, but although it is tolerably clear that two at least of his three species belong to it as now settled, yet his character, taken perhaps from the third, is at variance with it. The "Legumen turgidum, falcatum, acutum," refers evidently to that section of *Lebeckia* which I have called *Viborgioides,* which has precisely the same habit, and in which I have placed E. Meyer's V. *grandiflora.* All the other species of E. Meyer are undoubted *Viborgiæ,* although perhaps too much multiplied. It is a mistake also to describe the fruit of his V. *tetraptera* and *heterocládos* as winged all round. All the species have a winged appendage to the vexillary suture, and the lower or carinal margin thin and more or less expanded, but never winged beyond the suture.

The species all belong to the dry sandy regions of the Cape and neighbouring districts extending northwards to the Gariep and eastward to the Breede River.

1. V. *flexuosa* (E. Mey.! Comm. p. 28) glaberrima, ramis racemisque erectis elongatis laxis, foliolis lineari-cuneatis oblongisve glaucescentibus longiuscule petiolatis.—Legumen maturum non vidi, junius longe stipitatum, superne alatum.

Rocks of the Kamiesbergen, *Drège !*

2. V. *sericea* (Thunb.? Fl. Cap. p. 560) ramis virgatis striatis sericeis, foliolis cuneato-oblongis obtusis retusisve

junioribus sericeis demum glabratis, racemis multifloris, carina subrostrata, legumine stipitato anguste alato transversim rugoso.—*Crotalaria floribunda*, Lodd. Bot. Cab. t. 509. *Viborgia obcordata*, DC. Prodr. 2. p. 136 et alior. vix Thunb. V. *fusca*, Eckl. et Zeyh. Comm. p. 194 vix Thunb. V. *floribunda*, E. Mey.! Comm. p. 28.

This is the commonest species in Swartland and dry sandy places in the S. W. part of Cape Colony. The leaves always dry black, and are seldom more than three lines long, and the branches are more broomlike than in any other species. I have little doubt that it is the V. *sericea* of Thunberg, although it is impossible to determine the point with certainty, without an inspection of his herbarium; for in his Flora he tells us first that the leaflets and branches are pubescent, then that the whole shrub is smooth, again that the leaves are entirely silky-pubescent, and lastly that they vary in being more or less silky.

The V. *obcordata* of Thunberg may perhaps be a *Lebeckia*, for we must suppose that one at least of his species, and in all probability the first in his list, agrees with his generic character.

3. V. *fusca* (Thunb? Fl. Cap. p. 560) glabra, ramis rigidis, ramulis subvirgatis, foliolis obovatis v. cuneato-oblongis mucronulatis v. rarius obtusis, racemis multifloris, carina obtusiuscula, legumine stipitato hinc late alato faciebus tenuiter reticulatis.—*Pterocarpus peltaria*, DC. Leg. Mem. p. 394, t. 57, f. 2. (legumen). V. *oblongata*, E. Mey! Comm. p. 29, excl. var β. V. *incurvata*, E. Mey! Comm. p. 30.—This dries black like V. *sericea*, the branches are shorter and more rigid and leafy, the flowers considerably smaller.

Sands of Swartland, *Thunberg*; near Roodepan, *Drège!*

β. *microphylla*.—V. *parviflora*, E. Mey? Comm. p. 31.

Near Breede river in Swellendam, *Mundt!*

4. V. *cuspidata*, glabra, ramis rigidis, ramulis brevibus flexuosis divaricatisve rarius subspinescentibus, foliolis parvis obovato-v. cuneato-oblongis mucronulatis obtusisve, racemis

laxis paucifloris, carina subrostrata, legumine stipitato anguste oblongo subturgido hinc alato faciebus lævibus.—V. *oblongata, β. cuspidata*, E. Mey.! Comm. p. 29.

Sandy hills near Kasparskloof, *Drège!*

5. V. *lanceolata* (E. Mey.! Comm. p. 29) undique subsericeo-pubescens, ramis ramulisque patulis rigidis demum subspinescentibus, foliolis cuneato-oblongis obtusis v. acutiusculis dense sericeo-pubescentibus, racemis brevibus multifloris, calyce late campanulato pubescente, carina obtusiuscula, legumine stipitato hinc membranaceo-alato, ala infra stylum truncata, faciebus tenuiter reticulatis.—*Viborgia sericea, litt. a! et b?* E. Mey.! Comm. p. 30.—None of the specimens I have seen of this plant dry black. I have not seen the pod quite ripe.

Dry rocky mountains of Mierenkasteel and Kasparskloof, near Uitkomst and Wupperthal, *Drège!*

6. V. *spinescens*, (Eckl. et Zeyh. Enum. p. 194), glabra, ramis ramulisque rigidis divaricatis spinescentibus, foliolis cuneato-oblongis obovatisve obtusiusculis pallidis, racemis multifloris, carina rostrata, legumine hinc late membranaceo-alato faciebus reticulatis sutura carinali tenui.—V. *monoptera*, E. Mey.! Comm. p. 30. V. *heteroclada*, E. Mey.! l. c. quoad litt. a.

Sands and rocks of Kockmans kloof, *Mundt!* Vierentwintig river, and foot of the Kooperbergen, *Drège!*

7. V. *tetraptera* (E. Mey.! Comm. p. 29), glabra, ramis ramulisque patentibus rigidis flexuosis divaricatisve subspinescentibus, foliolis obovato-oblongis cuneatisve obtusis v. mucronatis, carina subrostrata, legumine hinc late alata margine inferiore alæformi, faciebus alato-cristatis.

Cape and neighbouring districts, *Drège! Bowie! Burchell!* n. 6835, etc.

8. V. *angustifolia*, foliolis plerisque linearibus.—V. *tenuifolia*, E. Mey, Linnæa, 7, p. 159.

Mouth of the Breede river. *Mundt!*

(*To be continued.*)

HEPATICÆ ANTARCTICÆ; *being characters and brief descriptions of the* HEPATICÆ *discovered in the southern circumpolar regions during the Voyage of H. M. Discovery Ships Erebus and Terror; by* DR. J. D. HOOKER, *and* DR. THOMAS TAYLOR.

WHILE engaged in preparing for the press other families of Plants collected during the recent voyage of Captain Sir James Ross in the Antarctic Regions; Dr. Taylor whose knowledge of the *Hepaticæ* is so universally acknowledged, has kindly assisted me in the investigation of those now under consideration; and in order that the public may derive advantage from it, we give a synopsis of the species in the present Journal, with some remarks, reserving more full observations and figures for the "Botany of the Antarctic Voyage," now in course of publication. *J. D. H.*

I.—SPECIES OF LORD AUCKLAND'S AND CAMPBELL'S ISLANDS.*

HEPATICÆ L.

The genus *Jungermannia, L.* at present consists of six hundred and ninety-six published species, and it is conjectured, of at least three hundred and four more undescribed, but known to Botanists and preserved in their herbaria. We have thus, under a single genus one thousand species, which, perhaps, is without parallel in any other department of Natural History. To relieve the memory, to facilitate arrangement, to give greater precision to communication between Naturalists, and above all to define the groups of which nature composes this immense multitude, their properties and relations; these are strong and worthy motives to attempt the sub-division and analysis of such a genus. Naturalists of first-rate talents have made the essay, *Nees*

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* For the position and other particulars respecting this group of Islands, see the Botany of the Antarctic Voyage above mentioned, in Preface.

von Esenbeck, Lehmann, Lindenberg, Gottsche, Raddi and others have lately endeavoured to establish new genera. These, we consider for the present as not entirely accepted by Botanists, but in the light of proposals, deserving their best consideration. We have, therefore, in the following arrangement steered a middle course, and separated the *Jungermanniæ* into sections to which we have given the names of the genera lately advanced, so far as they apply to the species from Campbell's Island and Lord Auckland's group.

JUNGERMANNIA, L.

(Gymnomitrion, *Nees.*)

1. *I. stygia*, n. sp., caule erecto subcæspitoso ramoso, foliis erectis adpressis subimbricatis obovatis obtusis emarginatis integrisque, perichætiis rotundatis caule duplo latioribus.

HAB. Campbell's Island.

Plants growing in somewhat a tufted manner, up through *Musci* and other *Jungermanniæ;* blackish-purple above, the more concealed parts of a dusky olive colour. Stems 2 or 3 lines long, much and irregularly branched. Leaves very minute, alternate, scarcely imbricated, oval or obovate, sometimes entire and very obtuse, more commonly and especially on the older stems with a shallow rather obtuse notch, the segments obtuse; the upper margin sometimes scariose. The perichætia are subrotund and have closely imbricated wide leaves, always scariose and white at their tops.

This species approaches to *Jung. concinnata*, Lightf. very closely; but the leaves are more distantly placed, the stems more slender and the perichætia are sessile and round. In colour it resembles the German *Gynomitrion adustum,* Nees; this, however, has far shorter and more simple stems.

2. *I. acinacifolia*, n. sp.; caule cæspitoso erecto subramoso, foliis imbricatis erectis secundis concavis atro-purpureis acinaciformibus integerrimis apice rotundatis demum scariosis.

HAB. Campbell's Island.

Tufts overtopping other mosses, scarcely an inch high, dark purplish-brown. Stems often bent, having a pair of annual shoots from the end of the shorter stem of the preceding year. Leaves so imbricated, as well as so secund, as to leave a channel along the upper part of the stem, which is usual in this subdivision of the genus. The leaves are somewhat scymetar-shaped, that is with their posterior margin slightly bent back, while the anterior is gibbous.

The entire leaves distinguish at once the present from its European congener, *I. concinnata*, Lightf., while the Cape of Good Hope *Gymnomitrion scariosum*, Nees. which likewise has entire foliage, displays a different habit altogether with its pale lemon-coloured shoots, its thinner leaves, and above all with the presence of stipules.

3. *I. ochrophylla*, n. sp.; caule decumbente inflexo ramoso, foliis distichis imbricatis erecto-patentibus concavis obovatis emarginatis segmentis obtusis, stipulis subnullis.

HAB. Lord Auckland's group.

In loose patches, some inches in diameter, very pale green. Stems about an inch long, irregularly branched, somewhat thickened above. Leaves slightly amplexicaul on opposite sides of the stems, their notch shallow, their segments nearly equal and obtuse, themselves imbricated but not adpressed, from a narrow concave base obovate. The stipules are sometimes observable as very minute oblong scales, scarcely notched on their summits; very frequently, however, they are altogether absent. This may be distinguished from our *I. perigonialis* by its greater size, its paler colour, its leaves being more crowded, their segments more obtuse, their cellules much larger and the stems much thicker.

(Sarcoscyphus, *Nees.*)

4. *I. perigonialis*. n. sp.; caule cæspitoso erecto subramoso, foliis subcontiguis erectiusculis secundis basi amplexicaulibus integerrimis obovatis, emarginatis, segmentis inæqualibus obtusiusculis, perigoniis ovato-oblongiis, eorum foliis

subintegris concavissimis arcte imbricatis basi ventricosis.

HAB. Lord Auckland's group.

Tufts dense, several inches in diameter, brownish. Stems about half an inch long, rather thick. Leaves scarcely imbricated, embracing the stem, towards the middle slightly recurved, emarginate with an obtuse sinus, the inferior segment the larger, both ranks of leaves are bent up from the inferior side of the stem and so are somewhat secund. Perigonia very frequent, sometimes in the middle of a shoot, sometimes terminal, their diameter is wider than that of the rest of the shoot, their leaves quite tumid, half-pitcher-shaped at the base, their tops short, entire or but faintly notched.

Although no calyces have been observed in the present, its affinity to the European *Jungermannia Funckii*, Mohr, is so strong, that the one may easily be mistaken for the other. In the latter, however, 1. the stems are shorter, 2. the leaves more closely set, 3. their division into two segments is deeper, while the segments are acute.

(Alicularia, *Nees.*)

5. *J. occlusa*, n. sp.; caule recto subcæspitoso, ramis binis simplicibus, foliis reniformibus hinc descendentibus integerrimis adpressis subconcavis.

HAB. Campbell's Island.

Stems nearly two inches high, the older parts black. Leaves of a dusky olive-green, their cellules very minute and close, they increase in size towards the top of the stem where they are collected into a subcircular circinate flat summit of a pale reddish-brown tinge.

This differs from the European *Jungermannia compressa*, Hook., by the inferior lobe of the leaf being longer and hanging down considerably below the inferior edge of the superior lobe, as also by the minuter and closer cellulation of the leaves. No fruit has been observed.

6. *J. strongylophylla*, n. sp.; caule cæspitoso erecto ramoso, foliis minutis erectiusculis subimbricatis secundis rotundatis concaviusculis integerrimis, stipulis minutis bifidis, calyce oblongo subcompresso ore rotundato bilabiato.
Var. β. minor; gracilior, foliis minutioribus.

HAB. Campbell's Island and, β., Lord Auckland's group.

Tufts brownish, about half an inch high, overtopping other mosses. Stems subflexuose. Leaves very small, densely cellular and having a series of larger cells around the margin, when moistened and under the lens appearing of a pale brownish-olive colour. Stipules very minute, oblong, bifid. There is no northern congener to which the present may be compared. In the var. β, from Lord Auckland's group, the leaves are more distant, rather smaller; besides, there occur perigonia consisting of short spikes of more crowded and ventricose leaves about the middle of the shoots; the perichætial leaves are longer than the cauline; the calyx scarcely exceeds in length the perichætial leaves and is oblongo-obovate, its mouth crenate.

(Gottschea, *Nees.*)

7. *J. Lehmanniana, Lind. in Lehm. Pug. IV. p.* 60. Gottschea Hombroniana, *Mont. in Annales des Sc. Natur. Avril*, 1843.

HAB. Lord Auckland's group.

8. *J. ciliigera;* n. sp. Caule procumbente cæspitoso repente vagè ramoso squamoso squamis ciliatis, foliis arcte imbricatis patentibus concavis acutis sublobato-ciliatis lobo *ventrali* latè ovato apice bifido, *dorsali* subæquali ovato, stipulis nullis, calyce demûm laterali oblongo-lanceolato inflato subincurvo.

HAB. Lord Auckland's group; amongst mosses.

Tufts several inches wide, pale-olive brown. Stems nearly three inches long, thickened and branched above, the branches sub-patent, compressed. Leaves alternate, very closely imbricated, the commissure of the lobes is prolonged beneath

the surface of the *ventral* lobe into a linear ciliated crest. The inflated top of the stem forms the base of the calyx, the upper part fixed upon this is formed of two leaves united at the base and convoluted above. Pedicel about half an inch long. Capsule oblong, large, splitting into four linear valves, which have the seeds mixed with spiral filaments attached to their bases.

This rivals in size and resembles in appearance *Gottschea Lehmanniana* of Nees; from which the absence of stipules will at once distinguish it, besides both lobes of the leaves being more acuminate and with elongated *ciliæ.*

(Plagiochila, *Nees et Mont.*)

9. *J. fasciculata, Lind. Spec. Hep. Fasc. I. p.* 7, *n.* 2, *t.* 1.

HAB. Lord Auckland's group.

10. *J. hemicardia,* n. sp.; caule cæspitoso erecto ramoso, foliis arcte imbricatis erecto-patentibus semicordatis subintegerrimis concavis, margine anteriore recurvo, posteriore basi gibboso.

HAB. Campbell's Island.

Tufts brownish-olive, about an inch high. The leaves meet back to back and, being closely imbricated, present a concave groove along the back of the stem on each side; above, the recurved margins are tumid and placed across the stem; the leaves are mostly entire, a few towards the summit having sometimes but two or three minute denticulations; their texture is close and consists of minute hexangular cells. In general habit the present bears no inconsiderable resemblance to *Jung. punctata,* Tayl., lately found in Ireland and likewise in the Canaries, but the subentire and gibbous leaves will readily distinguish it.

11. *J. circinalis, Lehm. et Lind., Spec. Hep. p.* 124, *n.* 75, *t.* 27.

HAB. Lord Auckland's group.

This entirely agrees with an authentic specimen from Lindenberg, except that the summits of the stems do not curve in so circinate a manner; but it is to be observed that such circinate summits are truly perigonia, which have leaves smaller, more ventricose and more erect than the cauline; some of them containing in the axillæ each a single, rather large, pedicellated anther.

12. *J. cognata*, n. sp.; caule cæspitoso erecto subsimplici, foliis laxe imbricatis erecto-patentibus late ovatis acuminulatis paucidentatis decurrentibus, margine anteriore recurvo, calycibus terminalibus, perichætio subæqualibus angustis oblongis parum curvatis bilabiatis, labiis acuminatis ciliato-dentatis.

HAB. Lord Auckland's group.

Tufts some inches in diameter, inferior parts dark brown, upper whitish-tawny. Stems scarcely one inch long, upright, slightly curved at the top, scarcely branched except by a pair of new shoots from the top of the stem or from the base of the perichætium of the preceding season. The leaves from a narrow base are widely ovate, having three or four large teeth of which the terminal is the greatest and gives an acumination to the leaf; the anterior margin is slightly recurved and decurrent in front of the stem. The perichætium has its leaves erect, elongated and deeply toothed. The full grown calyx does not exceed the perichætium in height, and is from a narrow base oblong, slightly bent to one side and at its mouth has a pair of dentato-ciliate, acuminate lips.

Jung. decipiens, HOOK., is very analogous to the present; this, however, has the inferior as well as the upper leaves constantly toothed, their tops are more decidedly acuminate, and above all, their structure is more dense, consisting of very minute, scarcely distinguishable cellules.

13. *J. pleurata*, n. sp.; caule cæspitoso erecto subramoso, foliis laxius imbricatis erecto-patentibus obovatis paucidentatis, margine anteriore recurvo, calycibus basi nudis elongato-obovatis costatis, ore minuto denticulato.

Hab. Lord Auckland's group.

Tufts several inches in diameter, dusky straw-coloured. Stems nearly one inch long, sparingly branched with one or two annual shoots. The lower leaves sometimes present but a single tooth on the margin, otherwise they are uniform, rounded above and slightly decurrent in front. The calyx has a long, very narrow base quite naked of leaves, it rises obovate, and is terminated by a narrow almost tubular mouth, it has four or five quite distinct rugged ribs of which two opposite to each other are more opaque, the old calyx splits down on two opposite sides, the perichætial leaves are similar to the cauline.

In the Peruvian *Plagiochila gymnocalycina*, Lind., the calyx, equally naked below, is smooth and quite destitute of ribs; its leaves are more serrated and the plant is of a larger size.

14. *J. fuscella*, n. sp.; caule laxe cæspitoso adscendente vage ramoso, foliis imbricatis erecto-patentibus rotundatis, siccitate verticalibus madore subdeflexis, margine anteriore recurvo subdecurrente, posteriore minutissime subserrulato, calyce terminali obovato truncato deflexo foliis perichætialibus breviore.

Hab. Lord Auckland's group.

Tufts wide, dark brown or nearly black. Stems one and a half inches high, curved at the very summits. Leaves round, slightly decurrent in front, but recurrent or turning up to meet the stem at the base of the posterior margin; in many the margin is entire, but in those nearest to the summit most minute denticulations may be observed with the lens.

This species is far larger than *Plagiochila pusilla*, Montagne, has not the stem curved, and its leaves are much more minutely denticulate. A very few calyces were observed, and found to be shorter than the perichætial leaves and concealed by them. Some were proliferous, i. e. one or two young shoots proceeded from their bases within and issued

out of their mouths, a circumstance I had before observed in *Jung. Lyoni,* Tayl.

15. *J. abbreviata,* n. sp.; caule erecto simplici disperso abbreviato, foliis imbricatis concavis erecto-patentibus latis rotundatis, margine subincurvo decurrente subintegerrimo.

HAB. Lord Auckland's group.

Stems scattered through tufts of other *Jungermanniæ*, very short, upright or slightly recurved, pale dusky olive. Leaves at the base, and again at the summit of the shoots, the smallest; hence the entire stem and leaves appear somewhat elliptical. The leaves are very concave, the one immediately above is partly received into the one next below; they have an uneven margin, which, however, is quite entire except on the terminating pair on which a solitary tooth may sometimes be descried on the upper margin.

From the North American *Plagiochila porelloides, Lind.*, our's may be distinguished by its simple stem, by the thickness of the short shoot in proportion to its length, and by the anterior margin being incurved.

(Jungermannia, *Linn.*) *

16. *J. colorata, Lehm. in Linnæa, IV. p.* 366.

HAB. Campbell's Island.

17. *J. intortifolia,* n. sp.; caule cæspitoso erecto innovationibus binis ramoso cæterum simplici, foliis imbricatis concavissimis oblongo-rotundatis inæqualiter bifidis segmentis acuminatis margine incurvo subdentato, stipulis rotundatis emarginatis subdentatis concavissimis imbricatis.

HAB. Campbell's Island.

Tufts from two to three inches high, flaccid, of a sordid purple colour. Stems thickened above. Leaves ventricose, appearing inflated from the incurvation of their margins, amplexicaul, scarcely dentate, sometimes entire; their seg-

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* Char. emendatus Neesii v. Esenbeck.

ments acuminate, with tops bent in. Stipules nearly rotundate, one margin often with the dentation more conspicuous than in the other, and this occurs on alternate sides of adjacent stipules.

This species approaches in characters very near to the tropical *Jung. serrulata*, Swartz. It is however a larger and thicker plant, has leaves more opaque and of a more lurid purple, they are moreover longer, more erect, with margins scarcely toothed.

18. *J. schismoides*, *Mont. in Voy. au Pol. Sud, t.* 17, *f.* 1.

HAB. Campbell's Island and Lord Auckland's group.

19. *J. multicuspidata*, n. sp.; caule subcæspitoso adscendente subramoso, foliis erectiusculis laxis concaviusculis obovatis bi-tri-quadrifidis, segmentis acuminatis, calyce terminali subulato ore dentato.

HAB. Campbell's Island.

Tufts one inch high, pale-brownish white. Stems branched by a pair of annual innovations, which are opposite and originate at the base of the calyx. Leaves rather distant, loose in texture, deeply and variously cut into two, three or four subdivergent segments. The two perichætial leaves always quadrifid, erect, loosely embracing the base of the calyx. This is subulate, inflated, minutely toothed at the mouth and with one or two faint longitudinal grooves on the neck. There are no stipules.

This species possesses many points of resemblance to the northern *J. bicuspidata*, L. as its pale colour, loose leaves with large cellules and with acuminate segments, and elongated calyx. It differs by its smaller size, its stem and leaves more erect, the leaves more divided and by the calyx terminating the branches and not supported on proper shoots, although in this particular *J. bicuspidata*, L. is sometimes sportive.

20. *J. turgescens*, n. sp.; caule procumbente cæspitoso ramoso, foliis imbricatis erectis secundis reniformibus antice basi decurrentibus integerrimis, stipulis obovatis apice bi-

fidis integerrimis, calyce terminali oblongo compresso truncato ore integerrimo.

HAB. Lord Auckland's group.

Tufts several inches wide, pale yellowish-olive. Stems scarcely one inch long, variously branched, ascending at their summits. Leaves nearly kidney-shaped, their margins slightly incurved, hence they are concave. Stipules rather small in proportion to the leaves, bifid at the top, with a very shallow notch, the segments subacute. The leaves on fertile shoots in a series rapidly increasing to the pair forming the perichætium, which are the largest and most erect, while the third or stipular piece is very small. Calyx terminating the shoot of the preceding year, from a narrow base oblong truncate and compressed before the issuing of the capsule, afterwards resembling a flattened cylinder slightly curved towards the upper side of the stem.

The *Jungermanniæ* with round concave imbricated leaves and bifid stipules, growing in the North of Europe, have calyces subcylindrical or ovate; the present is excentric by having that organ compressed and truncate. So it may be the type of a new genus as valid as many proposed in modern times; and to which, perhaps, our *J. strongylophylla* is likewise to be referred.

21. *J. notophylla*, n. sp.; caule cæspitoso erecto subramoso, foliis imbricatis patenti-recurvis rotundato-reniformibus concavissimis subintegerrimis margine incurvis, stipulis rotundato-ovatis obtusissimis concavis subintegerrimis.

HAB. Lord Auckland's group.

Tufts of parallel, erect, simple, pale straw-coloured shoots, a little thickened and incurved at their summits. The leaves from their incurved margins and inflated condition represent sacks partly divided. The stipules, likewise, which are much wider than the stems and about one fourth of the size of the leaves, are very hollow and mostly entire. The leaves are shaped somewhat like the human external ear, and are decurrent in front. Old plants turn of a dusky-purple colour.

There is no European, or foreign *Jungermannia*, that approaches the present in configuration.

22. *J. diplophylla*, n. sp.; caule procumbente implexo subramoso complanato, foliis distichis imbricatis patentibus ciliato-dentatis bilobis, lobis plica conduplicatis, lobo superiore minore ovato subacuto erecto-patente, inferiore late ovato obtuso patente, stipulis quadrato-rotundatis bifidis, segmentis sublinearibus ciliato-dentatis.

HAB. Lord Auckland's group.

Patches from one to two inches in diameter, whitish-olive. Stems about one and a half inch high, with a few irregular branches. The duplicature between the lobes of the leaves is about one third of the length of the inferior lobe. The duplicature of the leaf next above is received within the duplicature of the leaf next below, consequently the upper lobes are imbricated in themselves, as are the lower lobes in themselves.

The present would appear to belong to a new genus. It is an example of a *Scapania* of Lindenberg; but having stipules! Yet, probably, the fructification is quite different; for in a single instance, observed in a specimen from Macquarrie's River, there was no calyx present; the calyptra was globose, surmounted by a truncate style, rough with numerous barren pistilla on its surface and surrounded by numerous scales of which the interior were the narrowest, all of them laciniate and all enclosed in a triphyllous perichætium.

(Gymnanthe, *Tayl.*)

CHAR. GEN. *Receptaculum* commune terminale, obconicum, descendens. *Calyx* nullus. *Capsula* quadrivalvis, seta suffulta. *Elateres spirales* seminibus immixti. *Antheræ* in foliorum axillis liberæ, pedicellatæ.—Stirpes *exstipulatæ;* perichætia *majora;* folia *caulina infima minima.*

23. *J. tenella*, n. sp.; caule adscendente simplici, foliis

subimbricatis erecto-patentibus concavis subsecundis ex angusta basi obovatis obtusissimis apice bilobis dentatis, perichætialibus majoribus nutantibus, receptaculo communi elongato obconico striato.

HAB. Lord Auckland's group.

Stems scarcely tufted, erect, slightly incurved above, from one to three inches long, prolonged at the top by annual innovations arising from the base of the perichætium, when this is present. The leaves, in the series from the base to the summit of the stem, are constantly increasing in size. The receptacle is elongate, obconical of a pale tawny colour, striated: the barren pistilla are crowded, erect, linear, covered by a pair of laciniated scales, descending at a considerable angle from the stem and emitting rootlets. The perigonia are spikes situated in the course of the stems, and have leaves closely imbricated, erect, swollen at their bases, each containing several dusky oblong anthers whose pedicels are elongated.

To this genus or sub-genus may be referred *Jungermannia Wilsoni*, Tayl., (*Acrobolbus Wilsoni*, Gottsche) and *Jungermannia saccata*, Hooker.

(Lophocolea, *Nees.*)

24. *J. bispinosa*, n. sp.; caule procumbente implexo subramoso, foliis subimbricatis erecto-patentibus secundis, ex lata decurrente basi oblongo-ovatis obtuse emarginatis segmentis divaricatis acuminatis, stipulis minimis bipartitis utrinque subdentatis segmentis subulatis.

HAB. Campbell's Island.

Tufts two or three inches wide, whitish-yellow. Stems supine, slightly flexuose. Leaves, to the naked eye, so approximate that the patch resembles one of *Jung. furcata*, L.; their bases are broad, the lower margin decurrent, they are so secund that under a lens the stipules are conspicuous, divided nearly down to the base, each segment sometimes having a tooth or very short process on its outer margin towards the base.

One of a tribe difficult to determine or describe; all having *Jung. bidentata*, L. for their type; from this species our's differs by the minuter size, secund leaves, which are more elongated, their cellules more minute, their emargination deeper and the stipules more minute and less decompounded.

25. *J. grisea,* n. sp.; caule procumbente implexo ramoso, foliis patentibus approximatis supremis congestis ovali-rotundatis integerrimis marginibus recurvis, stipulis bipartitis segmentis hinc unidentatis, calyce terminali triangulari-oblongo compresso ore dentato.

Hab. Lord Auckland's group.

Patches flat, shallow, greyish-olive or dusky. Stems between one and two inches long, variously branched, tops of the shoots ascending. Leaves in the inferior part of the stem distichous, convex from the recurvation of both upper and lower margins, in the upper part adpressed and secund, forming a flat capitulum. Calyces about one line long, triangular, the angles thickened and opaque, the wider side corresponding to the inferior side of the stem, the mouth is triangular and toothed. Perichætial leaves three, erect, of these the two upper are larger and more elongated than the cauline, rounded and entire, the third or stipular is oblong, bifid with a shallow notch, its margins recurved.

This exhibits a strong resemblance to *Lophocolea discedens* of Nees; it is however a larger species, of a paler colour, the leaves are not patenti-recurved but rather erecto-patent, their tops are entire, the stipules have segments, bearing each a single tooth on the outer margin.

26. *J. lenta,* n. sp.; caule cæspitoso subsimplici adscendente debili subflexuoso, foliis distichis contiguis patentibus oblongis bifidis, segmentisd ivaricatis acuminatis integerrimis, stipulis minutis lanceolatis bipartitis integerrimis, calyce obovato compresso trigono ore bilabiato dentato.

Hab. Lord Auckland's group.

Tufts wide, white above, pale-brown beneath. Stems from one to two inches high, usually unbranched, elongated, incurved a little towards the summit. Although the stems are ascending, yet radicles issue from above the stipules throughout their entire length, whence it is possible that in situations where the stems are not tufted they may be altogether creeping and procumbent. The leaves are in two ranks, yet from their rising up they sometimes appear to be secund: they are widest about the middle, preserving, however, an oblong figure; they are emarginate, having an obtuse sinus and acuminated segments. It is rare to find a tooth on either segment of the stipules at their outward margin and towards the base. The perichætial leaves are upright, the two lateral do not differ in figure from the cauline; that corresponding to the stipules is nearly as large as the others. The calyx is delicate, nearly transparent, triangular, with the inferior side the widest, its angles are thickened and opaque, the mouth has large spinous teeth and is divided into acute segments. The capsule is oval; the peduncle one quarter of an inch long.

Of the European species, *Jung. bidentata*, L., is its nearest ally, from which its smaller size and entire segments of the stipules will readily distinguish it; but, it approaches much nearer to *Jung. perpusilla*, nob., from the same place; it may be known, however, by its greater size, more considerable upright tufts, the deeper emargination of the leaves, their more acuminate segments, their greater cellules, and the deeper partition of the stipules.

27. *J. perpusilla*, n. sp.; caule cæspitoso adscendente subramoso, foliis erecto-patentibus subsecundis oblongo-ovatis bifidis, segmentis divaricatis obtusiusculis integerrimis, stipulis minutis oblongis bifidis integerrimis, perigoniis ovatis.

HAB. Campbell's Island.

Tufts minute, occurring on different *Musci*, probably in very wet situations, very pale yellow. Stems scarcely three lines long, very sparingly branched. Leaves patent, usually from a narrow base ovate, bifid, very rarely trifid at the summit, their sinus obtuse. Stipules about the breadth of the stems, divided above into two acuminate entire segments. The perigonia are short ovate spikes of closely imbricated, ventricose leaves, with minute recurved summits. In plants bearing barren perichætia the leaves are more round, and increase in size towards the summit of the stem, where at length they become perichætial with a shallower sinus than in the cauline, than which they are far longer and are subdentate.

Exceedingly near the preceding, under the description of which the differences are pointed out.

28. *J. multipenna*, n. sp.; caule cæspitoso erecto apice innovationibus binis ramoso, foliis imbricatis concavissimis oblongo-rotundatis inæqualiter bifidis, segmentis acuminatis margine incurvis subdentatis, stipulis rotundatis emarginatis subdentatis concavissimis imbricatis.

HAB. Campbell's Island.

Tufts two or three inches high, flaccid, of a sordid purple colour. Stems thickened above. Leaves ventricose, inflated from the incurvation of their margins, amplexicaul, scarcely dentate, sometimes entire, their acuminated segments bent in. Stipules nearly rotundate, one margin, often, with the dentation more conspicuous than in the other and this on alternate sides of adjoining stipules.

This species approaches, in character, very near to the tropical *Jung. serrulata*, Swartz. It is, however, a larger and thicker plant, has the leaves more opaque and of a lurid purple colour, they are besides longer, more erect, and their margins far from being spinuloso-dentate, are scarcely toothed.

29. *J. spinifera*, n. sp.; caule prostrato implexo subramoso, foliis arcte imbricatis erecto-patentibus decurrentibus margine recurvis ovato-oblongis emarginatis bidentatis, stipulis majoribus subrotundis 6-fidis, segmentis lanceolatis.

HAB. Lord Auckland's group.

Growing rather scattered, than in patches, on the surface of other *Hepaticæ,* whitish-green. Stems about half an inch long, creeping, their tops acuminate and recurved, appearing channelled on the upper side from the closely imbricated leaves approaching at their bases. Leaves with large cellules, nearly transparent when viewed under a lens in water; they are widest at their insertion, their inferior margin is very decurrent, their sinus is obtuse, the segments much acuminate and divergent. Stipules remarkable for their size, from a round and concave base dividing usually into six segments, which embrace the leaves and give to the shoot a very spinous appearance. The anthers are situated at the bases of the perigonial leaves on the upper part of the stem in the channel between the leaves alternately; they are white, rather large, and are pedicellated.

30. *J. allodonta,* n. sp.; caule prostrato implexo ramoso, foliis distichis imbricatis patentibus ovato-oblongis obtusis subbidentatis, stipulis minutis lanceolatis bipartitis integerrimis.

HAB. Lord Auckland's group.

Patches some inches in diameter, lurid-green. Stems about one inch long, irregularly branched. Leaves lying in one plane, oblong, with a wide base, rather rounded at their tops, having commonly two teeth and an irregular sinus between them; often, however, there is but a single tooth and sometimes none; when one tooth is wanting it is always the posterior. Stipules deeply cloven, the segments linear, acute, entire.

The shape of the stipules, the lurid colour, and the more oblong leaves will distinguish this plant from *Jung. Trichomanes, Dicks.* in a barren state.

31. *J. planiuscula,* n. sp.; caule cæspitoso procumbente ramoso, foliis distichis subimbricatis patentibus ex lata basi rotundato-ovatis integerrimis, stipulis minutis ovatis apice bifidis basi utrinque unidentatis.

Hab. Lord Auckland's group.

Patches several inches broad, dusky purple or the younger shoots pale but dusky olive. Stems blackish, nearly two inches long, variously branched. Leaves flattish, thin, with large cellules, the tops often folded back and the outline irregular, being sometimes slightly indented, shewing a disposition to be emarginate, yet this does not occur. Stipules with a shallow division at their tops, not wider than the stems.

Allied to *Jung. heterophylla*, Schrad.; this moss, however, is much smaller, much paler, with leaves more decidedly emarginate, more closely imbricated, their cellules much more minute and the stipules more divided.

(Chiloscyphus, *Nees.*)

32. *J. australis*, n. sp.; caule laxe cæspitoso procumbente ramoso, foliis imbricatis planis rotundatis integerrimis, stipulis oblongis bipartitis segmentis basi dentatis, fructu in ramis brevibus terminali, calyce oblongo subcompresso bialato bilabiato labiis rotundatis dentatis.

Hab. Campbell's Island, and Lord Auckland's group.

From the former, the plants are brown, growing in loose patches among other *Jungermanniæ*. Stems above an inch in length, sending down rootlets from their whole under surface; irregularly branched. Leaves on the younger shoots vertical, adpressed and homomallous, on the older subpatent; of the cellules some are remarkably larger and more opaque, such are irregularly dispersed. Stipules oblong, deeply divided into two divergent, acuminate segments, each of which has a large tooth on the outer margin towards the base. On the short fertile branches are about five pairs of leaves, of which the pair next to the calyx or the perichætial are oblong and the stipule corresponding is the largest and most deeply laciniated. The calyx is oblong, cylindrical at the base, subcompressed above, where are two linear and waved wings, below is a short wing reaching from the base half-way towards the summit. A broken capsule found within a calyx contained angulato-rotundate seeds, which had the appearance of sutures diverging from a point above, also spiral filaments, slender, much twisted and containing a double helix.

The barren plant has a strong resemblance to certain states of *Jungermannia polyanthos*, L. from which the oblong, winged calyx and included calyptra, as well as the more toothed stipules, will serve to distinguish the present.

33. *J. Billardieri, Schwaeg. Musci Hepat. Prod. p.* 19.

HAB. Campbell's Island and Lord Auckland's group.

34. *J. coalita, Hooker, Musci Exot. t.* 123.

HAB. Lord Auckland's group.

35. *J. sinuosa, Hooker, Musci Exot. t.* 113.

HAB. Lord Auckland's group.

36. *J. leucophylla*, n. sp.; caule laxe cæspitoso elongato erecto subramoso, foliis imbricatis patentibus convexiusculis triangularibus decurrentibus cum stipulis oblongis coalitis utrinque spinoso-dentatis margine recurvis, calyce elongato oblongo compresso bilabiato, labiis denticulatis, perigonii foliis abbreviatis confertioribus.

HAB. Lord Auckland's group.

Rather dispersed among other *Jungermanniæ*, dusky yellowish-olive. Stems scarcely exceeding one inch in height; the branches few, and variously placed. Leaves and stipules spinoso-dentate on the anterior margin, which is considerably recurved. The perigonia are either terminal or in the course of a shoot, and very conspicuous from being so much narrower than the rest of the branch, with leaves much shorter and more crowded than the cauline; in the axillæ of three or four, single, pedicellated, very minute, oblong anthers may be observed.

37. *J. fissistipa*, n. sp.; caule prostrato implexo subramoso, foliis distichis imbricatis patentibus margine inferiore recurvo integerrimo basi decurrente ovatis obtusis ciliato-dentatis cum stipula coalitis, stipulis rotundatis laciniatis laciniis ciliato-dentatis.

Chiloscyphus spinosus, *Gottsche in Synops. Hepatic.*
HAB. Lord Auckland's group.

Patches some inches in diameter, growing on the surface of other *Hepaticæ* or *Musci*, pale-tawny. Stems from one to two inches long, variously but sparingly branched; shoots one eighth of an inch wide. Leaves rather flat, but, by the recurvation of the inferior margin, they appear at that part somewhat convex; the denticulation is long and the terminal pair of teeth include a considerable notch; the stipules are round and divided into about six short laciniæ, which however have teeth as coarse as those of the leaves.

The deeply divided stipules will serve readily to separate this species from *Jung. Billardieri*, Hooker.

(Lepidozea, *Nees*).

38. *J. lævifolia*, n. sp.; caule implexo elongato pinnato, ramis brevibus patentibus recurvis attenuatis, foliis stipulisque quadrato-rotundatis quadrifidis segmentis acutis incurvis, calyce in ramis brevibus ex inferiore parte caulis egredientibus terminali lanceolato acuminato apice plicato, ore denticulato.

HAB. Campbell's Island.

In flat tufts, or dispersed, pale-olive brown. Stems slender, one or two inches long; branches attenuate, short, issuing at right angles, subrecurved. Leaves fixed obliquely across the stem, rather distant, smooth. Stipules scarcely one fourth of the size of the leaves. Calyx terminal on a very short perichætium of a few erect adpressed leaves, which are less deeply divided than the cauline. Capsule cylindrical; seeds numerous, round, dark-brown; spiral filaments long, slightly twisted, having a double helix.

This species approaches the European *Jungermannia reptans*, L.; the size is smaller, the stems less closely pinnated, the leaves are more distant and have not the dotted appearance arising from prominent cellules as noticed of *J. reptans* in Hook. Brit. Jung. Besides, the calyx is situated on a shorter perichætium, and is more elongated.

39. *J. tenax, Greville in Ann. Lyc. of New York.*

HAB. Lord Auckland's group.

40. *J. tetradactyla*, n. sp.; caule implexo debili prostrato subpinnato, foliis distichis patentibus laxiusculis ex subquadrata basi longius quadrispinosis, spinis articulatis, stipulis minutis quadripartitis, calyce elongato cylindraceo ore contracto ciliato.

HAB. Lord Auckland's group; on *Jung. coalita*, Hooker.

Patches from one to two inches wide, pale yellowish-green. Stems often one inch long, much branched with alternate shoots, whose leaves are crowded towards the summit. The stem is contained in a transparent and colourless sheath, much wider than the opaque central part; hence, under a lens, the stem appears to be winged with a pellucid membrane. Leaves on the main stem more distant than at the tops of the shoots, from a broad subquadrate base, dividing above into four jointed setaceous segments. The stipules are scarcely wider than the stems, and their divisions are rather subulate than setaceous.

From *Jung. centipes*, Tayl., a species from Van Diemen's Land, the present may be separated by its darker colour, its more branched and decidedly pinnate stems, by the lesser ratio of the undivided to the divided part of the leaves, by the more distant and less patent leaves, and by the more setaceous figure of their segments.

The calyces and perigonia occur on New Zealand specimens; the former are fully as long as the shoots, that is, remarkably large in proportion to the size of the plant, they are ovato-cylindrical, very slightly bent to one side; the perichætial leaves are erect, and have a longer common base to the laciniæ than the cauline. The perigonia are cylindrical spikes, their leaves have large and tumid bases, and usually are only bifid above, each containing at its axilla a single, round, minute, brownish, pedicellated anther.

41. *J. patentissima*, n. sp.; caule subcæspitoso repente pinnato, ramis brevibus, foliis imbricatis patentibus late cellulosis obovatis quadrifidis segmentis rectiusculis integerrimis, stipulis minutis subquadratis quadridentatis.

Hab. Lord Auckland's group.

Patches shallow, creeping on other *Hepaticæ* or on *Musci*, pale yellowish-olive; branches scarcely distinguishable by the naked eye, alternate, short, the flagelliform ones attenuated, their leaves distant and diminishing towards the ends. Cauline leaves closely set, patent, their segments not recurved, their cellules large, obovate and divided above into four lanceolate segments, the undivided part cuneate. Stipules not wider than the stems, their divisions short.

Our plant approaches, in character and habit, nearest to the European *Jungermannia reptans*, L. It is, however, much smaller, its leaves are not at all incurved or concave, their undivided portion or base less considerable, their division deeper, and themselves more closely imbricated.

42. *J. albula*, n. sp.; caule subimplexo erecto ramoso, foliis imbricatis erecto-patentibus concavis late oblongis apice quadrispinosis antice gibbosis dentatis, stipulis concavis rotundatis subsexfidis.

Hab. Lord Auckland's group; growing on *Gottschea Lehmanniana*, Lind.

Stems thinly dispersed, very whitish-green, rather pinnate; branches short, except when terminated with flagelliform shoots. Leaves concave, their segments pointing forwards and thus imbricated, like a series of cups one within another, their cellules large, their anterior margin swelling out and dentate, the four segments or spines entire. Stipules about one-third the size of the leaves, imbricated, divided into from six to eight laciniæ.

The present is allied to *Jungermannia Scolopendra*, Hooker, as well as to *Jungermannia hirsuta*, Nees; both of these, however, have a hoary aspect, absent in our plant; besides their leaves are more erect and adpressed, while the segments are longer and narrower.

43. *J. hippurioides*, n. sp.; caule cæspitoso minuto procumbente ramoso, foliis subimbricatis patentibus ex angusta basi bi-trifidis, segmentis linearibus acutiusculis, stipulis minutis erectis adpressis trifidis.

Hab. Lord Auckland's group. On bark.

Tufts with variously entangled, flattish shoots, pale olive. Stems nearly two inches long, very irregularly pinnate. Leaves closely set, patent, appearing as if the segments were in whorls, divided into two or three deep segments, very rarely into four, such laciniæ are not articulated but minutely cellular. The stipules may easily escape detection, lying closely adpressed to the stem, and not exceeding it in diameter; they have usually three upright linear divisions.

From *Jungermannia tetradactyla*, nob. above described, the present may be known by its shorter, more patent leaves, which, as well as the stipules, are usually trifid.

44. *J. dispar*, Mont.

Campbell's Island, and Lord Auckland's group.

(Mastigobryum, *Nees*).

45. *J. Novæ Hollandiæ*, Nees.

Hab. Lord Auckland's group.

46. *J. involuta*, Mont. *in Voy. au Pol. Sud. t.* 18. *f.* 2.

Hab. Lord Auckland's group.

Of all the *Mastigobrya* of Nees the present most approximates to *M. Novæ Hollandiæ;* it may be distinguished by the yellower colour of the entire plant, the more simple and greater stems, by the larger, wider, and shorter leaves, which, too, are not so closely imbricated, and by the wider cells of which they are composed.

47. *J. atro-virens*, n. sp.; caule disperso erecto ramoso subtus flagellifero, foliis patentibus subdistantibus triangularibus obtusiusculis apice inæqualiter bifidis cæterum integerrimis, cellulis marginem inferiorem versus majoribus, stipulis minutis semirotundatis tripartitis, segmentis acutis.

Hab. Lord Auckland's group.

Stems about one inch high, frequently solitary, irregularly branched, the younger greenish-olive, the older blackish. Leaves minute in proportion to the breadth of the stem, scarcely imbricated, triangular or obliquely ovate, acutely emarginate, slightly incurved at the top; the cellules are in distinct dots, and so much larger towards the inferior margin as to give the appearance of the presence of a pellucid nerve as happens in *M. inæquilaterum*, Nees. Stipules scarcely as wide as the stems; they have three acuminate teeth, issuing from a shallow common portion. The diminutive size, irregular branching, great disproportion between the breadth of the stems and of the leaves, their rather distant position and unequal cellules, give characters, when taken together, that readily distinguish the present from all its congeners.

48. *J. nutans*, n. sp.; caule laxe cæspitoso erecto incurvo simplici, foliis arcte imbricatis patentibus concavis latissime ovatis apice inæqualiter bifidis, margine subintegris, stipulis erectis oblongo-rotundatis concavis apice subdentatis, stolonibus subbasilaribus adscendentibus apice demum foliosis.

Hab. Lord Auckland's group.

Stems tufted, simple, nodding, or bending down, as in *Jungermannia tenax*, *Grev.*; almost white near the root, pale dusky-green above, except at the summit which is often blackened. The leaves are almost cup-shaped, bifid, the inferior segment the smaller, the cells project at the margins which here and there especially towards the top have one or two teeth: the cells are large at the centre, and at the bases of the leaves.

In *Jungermannia tenax, Grev.*, which exhibits in some degree the habit of the present, the stems are branched, and the leaves multifid.

(Schisma, *Nees.*)

49. *J. Scolopendra, Hook. Musci Exot. t.* 40.

Hab. Lord Auckland's group.

(Mastigophora, *Nees.*)

50. *J. hirsuta, Nees.*

Hab. Campbell's Island.

(Trichocolea, *Nees.*)

51. *J. mollissima*, n. sp.; caule implexo adscendente bipinnato, ramis teretibus, foliis alternis e basi lata dichotomo-multifidis, laciniis capillaribus subincurvis, stipulis bifidis dichotomo-partitis laciniis capillaribus, calyce ex inferiore caulis parte clavato-obovato bilabiato undique squamis lineari-lanceolatis ciliato-laciniatis tectis.

Hab. Lord Auckland's group.

In flat patches, soft in appearance, as well as to the touch, the young pale pea-green, the older much paler, almost white; stems five or six or more inches long; branches crowded and nearly equal, whence the shoots have a pectinate appearance. Leaves patent at the base, incurved at the top. Stipules smaller, but similar to the leaves. Calyces nearly two lines long, lateral; pedicels half an inch long. Capsule oblong.

This may easily be overlooked for *Jungermannia Tomentella*, Ehrh.; but the branches are more crowded, cylindrical, not compressed, the stipules and leaves are dichotomously divided, and the scales on the calyx are longer, and lineari-lanceolate.

52. *J. polyacantha*, n. sp.; caule subcæspitoso erecto ramoso spiculis scabrido, foliis laxis erectiusculis stipulisque ex angusta basi quadrifidis laciniis ramosis, segmentis spiculiformibus articulatis, calyce terminali majore obovato tumido quadridentato squamifero.

Hab. Lord Auckland's group.

Patches consisting of a few plants, growing up among other *Jungermanniæ*, from which they borrow support, pale dusky-olive. Stems about one inch long, variously divided, their tops thickened with a cluster of new leaves thickly set with rigid, straight, short scales like tops of needles, these as well as the segments of the leaves and stipules are articulated. Leaves somewhat embracing the stem; the stipules somewhat concave towards the stem. The calyces are truly terminal, very large in proportion to the size of the stems and leaves, bearing leaf-like scales; they are from a narrow base obovate.

This species is readily distinguished from the Antarctic *Jungermannia tetradactyla*, Tayl., as well as from the European *J. setacea*, and *J. trichophylla*, by the compound laciniæ of the leaves; besides, the stems and branches have a peculiar rugged and squamose appearance from the different directions which the points of the crowded leaves and stipules assume.

(Radula, *Nees.*)

53. *J. complanata,* L.

Hab. Campbell's Island.

54. *J. aquilegia,* n. sp.; caule cæspitoso prostrato subpinnato, ramis complanatis, foliis imbricatis erectiusculis convexis integerrimis, lobo superiore obovato-rotundato margine recurvo, perichætialibus oblongis transversalibus deflexis, calyce elongato-obconico compresso truncato integerrimo. J. complanata, *var. β. Hook. Br. Jung. t.* 81. *f.* 17.

Hab. Lord Auckland's group.

Patches wide, shallow, brownish-olive. Stems from one to four inches long, irregularly pinnate, the branches set nearly at right angles. Leaves from a narrow base flatly cup-shaped, the lower lobe tumid at its involution with its angulate top, lying closely adpressed to the inside of the upper lobe.

This species is found abundantly in Ireland, and, according to Lindenberg, in Switzerland. It may be discriminated from *J. complanata,* L. by the smaller size, more convex leaves, their olive-brown colour, their lesser lobe not sharply reflected on the upper but having a tumid base, and by the deflexed perichætial leaves; besides the perigonia occur usually at the termination of a shoot, and not on proper short branches; the angulate portion of the lower lobe is shorter than in *J. complanata,* L. In Ireland this species prefers the wet surface of mural rocks, but *J. complanata* the drier situation of bark of trees.

55. *J. uvifera*, n. sp.; caule implexo procumbente subpinnatim ramoso, foliis distichis imbricatis integerrimis, lobo superiore majore rotundato-oblongo apice recurvo basi ventricoso, inferiore truncato recurvo oblongo-ovato obtuso apice adpresso plano, perigoniis filiformibus lateralibus sub foliis latentibus, calyce oblongo compresso truncato integerrimo utrinque alato.

Hab. Lord Auckland's group.

Tufts flat, thick, brownish-olive. Stems from one to two inches long. Leaves somewhat recurved, when dry they appear to have at the base, and near to the stem, each an oval body, which in reality is the swollen base of the recurved lower lobe, whose rounded summit, however, lies flatly adpressed to the upper lobe. From under the leaves several annual shoots arise like the stem, but diminutive in all their dimensions; with these frequently alternate very minute filiform perigonia, having eight or ten pairs of pitcher-shaped closely imbricated leaves; the entire perigonia are covered by the upper lobe of the leaves. The perichætium is formed of two erect leaves, whose tops are wide and round, and whose inferior lobes overlapping each other form almost a tubular base.

This species is closely allied to *Radula pectinata*, of Nees; but the leaves of this have their upper lobes more elongated, while the lower terminates in a single broad tooth or *apiculus*; the *perigonia*, too, are shorter in proportion to the leaf. The calyx is singular in the present species for having, on each side, from four to five elevated opaque ridges or wings.

(Madotheca, *Nees.*)

56. *J. partita*, n. sp.; caule subcæspitoso erecto subdichotomo, foliis imbricatis patentibus convexis recurvis integerrimis, lobo *superiore* oblongo-rotundato, *inferiore* vix commisso ovato obtuso margine exteriore basi dentato, stipulis imbricatis ovalibus obtusissimis integerrimis margine

planis, calyce laterali compresso late ovato, ore bilobo, lobis denticulatis, capsula basin usque quadripartita.

HAB. Lord Auckland's group.

Tufts loose, of a pale yellowish-green. Stems from three to four inches high, branching usually in a dichotomous manner; branches rather short, patent. Leaves closely imbricated, and even when moistened recurved, so as to give to the upper side of the stem a very convex appearance; their margins are quite entire, except of the perichætial pair, in which they are dentate. Before protrusion of the capsule, the calyces have their mouths compressed, their upper surface convex, while beneath there is a longitudinal prominent ridge. The capsule is divided into four valves down to the very base.

From the European *Jungermannia platyphylla*, L., the present is, at first sight, distinguishable by its ramification, which is not so decidedly pinnate, by its more distant branches, by the lower lobes of the leaves being more acute as well as by its being toothed exteriorly towards the base, by the plane margins of the stipules, and by the complete division of the capsule into valves.

(Frullania, *Nees*).

56. *J. Magellanica, Lamark, Encyc. Bot. v.* 3, *p.* 28.

HAB. Campbell Island.

57. *J. clavigera, Hook. Musc. Exot. t.* 70.

HAB. Campbell Island.

58. *J. myosota*, n. sp.; caule implexo procumbente bipinnato; foliis imbricatis patentibus convexis ovato-rotundatis integerrimis, auriculis minutis obovatis divergentibus foliorum ad basin processui marginali involuto insidentibus. stipulis caule latioribus obovatis bifidis, calyce ex angusta cylindracea basi obovato plicato, ore laciniato integerrimo.

HAB. Campbell Island and Lord Auckland's group.

Tufts flattish, shallow, reddish-brown. Stems two inches long, wider above, pinnated, the branches again pinnated with shoots that have their leaves and auricles closely set.

Leaves, the inferior pale olive, the upper reddish-purple, very thin, rather loosely imbricated, pointing a little forwards, their cells minute: at the inferior margin, near the stem, is a process which, folding inwards towards the leaf, forms an oblique pedicel to the auricle; this is sometimes accompanied by a minute oval leaf, and is inflated, obovate and open beneath. The perichætial leaves are three, erect, closely embracing the base of the calyx, the two lateral are entire, obovate, having a strap-shaped, acute, curved inner lobe with reflexed sides, the third or stipular leaf is oblong, deeply divided into two recurved linear segments, whose margins are rugged but not toothed. For nearly one third of its length, at the base, the calyx is cylindrical and smooth, then rotundato-obovate, exceeding the *perichætium* by one third of its length, it is split above into three or four *laciniæ*, and has longitudinal indentations on the upper, but a wide ridge on the inferior surface; in the young state it appears to be crowned with a short tube. By the minute, divergent auricles, occurring below the leaves, this species is easily known from its congeners.

59. *J. allophylla*, n. sp.; caule laxius disperso tenui debili flexuoso subramoso, foliis subdistantibus erecto-patentibus late ovalibus obtusis acutisque integerrimis subdentatisque, auriculis anguste oblongis subincurvis ab foliorum basi divergentibus, stipulis minutis bifidis segmentis lanceolatis interdum auriculiformibus.

HAB. Campbell Island: among other *Jungermanniæ*, very sparingly.

Black when dry; moistened, under the microscope, appearing of a fine dark-purple colour. Stems only two or three lines long, having a few alternate short branches. The leaves present great differences of form, the lower are the longer, they are broadly elliptical or ovate, very obtuse or acuminate, entire or with one or two large teeth; their cellules are very large in proportion to the size of the plant; the auricles are supported on an inflexed part of the lower margin of the leaf; they are large compared with the latter, and lie below them, divaricating outwards and downwards. As in *Junger-*

mannia clavigera, Hook., the segments of the stipules are frequently replaced by auricles. The present is, perhaps, the minutest species of this subdivision of the genus, hitherto known.

60. *J. reticulata*, n. sp.; caule implexo prostrato subpinnatim ramoso, ramis brevibus, foliis distichis imbricatis patentibus concavis, rotundato-oblongis apice recurvis, margine inferiori subdentatis, auriculis subbifidis, segmente *exteriori* clavato, *interiori* subulato; stipulis quadripartitis.

HAB. Lord Auckland's group.

Patches several inches wide, flat, entangled, the older parts blackish, the new either pale, almost whitish, or of a fine vinous red or purple. Stems about two inches long, often elongated, the branches very short. Leaves remarkably pellucid and having large reticulations or cells; entire, except that the cauline have a tooth or two on their inferior margin; on the main stem, the clavate auricle is accompanied by a subulate leaf-like process, between it and the stem. Stipules rather concave, deeply divided, their segments much acuminated; on the younger branches the segments of the stipules are often but two; but the segments, whether two, three, or four, are sometimes changed into clavate forms. Between this, one of the most beautiful objects under the microscope, and *Jungermannia clavigera*, Hook., it is difficult to define the differences. The larger cells of the leaves of the present, the larger and darker tufts, the shorter branches frequently concealed by the leaves, the tumid summits of the stems, the denticulation limited to the inferior margin of the leaf, and the margins of the segments of the stipules not recurved, are very principal and decisive marks.

61. *J. aterrima*. n. sp.; caule implexo procumbente vageramoso foliis imbricatis patentibus concavis integerrimis rotundato-oblongis, apice recurvis, auriculis late oblongis inflatis, stipulis minutis ovatis bipartitis, segmentis lanceolatis exterius basi unidentatis, perigoniis rotundatis, foliis perichætialibus integerrimis incurvis.

HAB. Lord Auckland's group.

Tufts several inches wide, black, the shoots shining, at the very summits sometimes purplish; branches for the most part solitary, by no means pinnate, of nearly equal thickness throughout. The inflated auricle has its lower end below the inferior margin of the leaf. Stipules bipartite, having so large a tooth exteriorly on each segment, that the entire may almost with propriety be said to be quadrifid. What is rare in this genus; the plants are usually monoicous, or have *perigonia* and *perichætia* on the same stems; the former rest on short stalks, and are renato-rotundate, having in the dry state a longitudinal groove observable on the upper side, where the inner margins of the inflated closely imbricated leaves meet; the *perichætia* have their three leaves so secund and so concave, as to appear as rounded bodies. This species possesses some points of affinity with *Jungermannia fragilifolia*, Tayl., lately observed in Ireland and in Switzerland, a plant equally minute, but scarcely so uniformly black and shining, and which has the leaves less densely cellular, while the perichætial are dentate.

62. *J. congesta*, n. sp.; caule cæspitoso procumbente ramoso, foliis imbricatis patentibus integerrimis ovalibus subapiculatis auricula inflata oblonga, stipulis minutis rotundato-ovatis bifidis integerrimis, foliis perichætialibus oblongis apiculatis incanis integerrimis.

HAB. Lord Auckland's group.

Patches several inches wide, reddish-brown. Stems nearly two inches long, irregularly yet somewhat pinnatedly branched; branches erecto-patent, curving upwards. Leaves concave, usually apiculate; the auricle reaches below the lower margin of the leaves, and is removed from contact with the stem. Stipules quite entire, with acutely bifid tops; they are scarcely wider than the stems. The barren *perichætia* have a rounded summit, which probably is altered in the calyciferous plant; the leaves are all erect, acuminate, and entire, the two lateral are oblong, each with an inner lobe whose margin is reflexed, the third or stipular leaf is divided deeply into two lanceolate, apiculate, entire segments.

The present is nearly allied to *Jungermannia aterrima*, nob., which is, however, readily and exactly distinguished by its black colour, by its less acuminate perichætial leaves, and principally by its entire stipules.

(Lejeunia, *Sprengel*).

63. *J. implexicaulis*, n. sp.; caule cæspitoso erecto ramoso, foliis subimbricatis erecto-patentibus ovatis obtusis concavis apice incurvis, lobulis anguste ovatis inflexis tumidis, stipulis rotundatis caule latioribus apice fissis.

HAB. Campbell's Island.

Tufts about one inch high, brownish-olive. Stems variously branched; the branches erect. Leaves very concave, hence the shoots have a nodulose appearance, they are somewhat decurrent, on which part the involute *lobulus* is placed. Stipules nearly circular, and often appearing undivided, but pressure exhibits a narrow split.

This is closely allied to *Jungermannia serpyllifolia*, Dicks., which does not appear to be an Antarctic species, and differs by its darker colour, more concave and more erect leaves, which too are somewhat acute, and have minuter and more densely placed cellules; besides, the segments of the stipules are by no means divergent.

64, *J. albo-virens*, n. sp.; caule implexo prostrato ramoso, foliis laxis patentibus oblongis apice rotundatis integerrimis, lobulis ovatis involutis tumidis, stipulis exiguis oblongis bifidis segmentis obtusis, calyce in ramo brevi proprio terminali ex angusta basi elongate-obovato apice quadriplicato tubifero.

HAB. Lord Auckland's group.

Patches superficial, one or two inches in diameter, by no means tufted, very pale olive-green. Stems from two to three lines long, irregularly and distantly branched. Leaves embracing the stem, half-pitcher-shaped below, oblong and rounded above, with the tops for the most part bending back, their structure is close with minute cells. Stipules closely adpressed to the stems, so as to be observed with some difficulty, oblong, scarcely as wide as the stem. *Perichætia* of three pieces, the two lateral upright, concave, obtuse, each having an acute lobe on the inner side, the third or stipular leaf is from a narrow base oblong, bifid, in all respects like a magnified stipule. The calyx opens by four *laciniæ*, which before emission of the capsule lie close together and form a short tube. Capsule, as seen when removed out of a calyx, sphærical, pale-brown, the valves not divided down to the base. Seeds very large in proportion to the capsule, and consequently comparatively few, very angular; spiral filaments very few, in diameter not one third of that of the seeds.

Jungermannia ulicina, Tayl., which has sometimes been taken for *Jungermannia minutissima*, Smith, bears strong resemblance to the present, especially in its preferring other moist mosses on which to grow. The Irish plant, however, is distinct by its less size, the greater cells of its leaves, which are subacute, whilst their *lobulus* has a sharp process or tooth at the point of its involution, by the more divided stipules, whose segments are more acute and by the recurved perichætial leaves.

65. *J. Mimosa*, n. sp.; caule implexo repente ramoso, foliis imbricatis patentibus concavis acinaciformibus integerrimis apice recurvis, lobulis ovatis involutis, stipulis ovatis acute bifidis, calyce elongate—obovato pentagono ore contracto tubifero.

HAB. Lord Auckland's group.

Patches minute, dusky olive. Stems about half an inch long, irregularly branched. Leaves somewhat recurved, and so appearing scymitar-shaped; the *lobulus* is oval and erecto-patent: the structure of the leaves is very dense. Stipules scarcely wider than the stems. The lateral perichætial leaves wide, oblong, quite entire, concave, with recurved tops, the third or inferior leaf is in all respects like the stipules, except that it is more elongated and more concave. The *perigonia* are lateral, short, obtuse spikes, directly placed on the stem, their leaves are short, roundish, tumid and very closely imbricated. Calyces from a narrow linear base obovate, with five ribs or angles, very obtuse, terminating in a minute erect tube.

The chief points of distinction between this and *Jungermannia serpyllifolia*, Dicks., are the denser structure of the leaves, their recurved tops, the larger calyx, more naked at the base, and the rounder, more concave, and less erect perichætial leaves.

66. *J. latitans*, n. sp; caule disperso tenuissimo prostrato ramoso, foliis subimbricatis erecto-patentibus celluloso-crenulatis ovatis acutis, lobulis ovatis involutis, stipulis minutis bifidis segmentis lanceolatis obtusis, foliis perichætialibus acuminatis.

Hab. On *Jung. uvifera*, nob. Lord Auckland's group.

Patches very loose and shallow, very pale-green. Stems three or four lines long, creeping, irregularly branched. Leaves scarcely imbricated, on young shoots rather distant; they vary in length, and in being acute or acuminate; their cellules are very large, especially towards the margin, which has a rugged appearance, but it is not regularly crenate; the *lobulus* only half as wide as the leaves. Stipules scarcely wider than the stems. The *perichætia* are terminal on the shoots of the preceding year, erect, obovate, all the pieces acuminate, the two lateral incurved, so that without careful observation the *perichætium* may pass for a bilabiate calyx, the third or stipular perichætial leaf is concave, oval and bifid.

The present resembles the Irish *Jungermannia echinata*, Tayl., but the leaves are not so regularly crenate; besides, stipules are present.

(Symphyogyna, *Nees*).

67. *J. Phyllanthus, Hooker, Musci Exot. t.* 95.

Hab. Lord Auckland's group.

68. *J. flabellata, Labillard. Fl. Nov. Holl. t.* 254, *f.* 1.

Hab. Lord Auckland's group.

(Aneura, *Nees*).

69. *J. multifida, L.*
HAB. Lord Auckland's group.

(Metzgeria, *Nees*).

70. *J. furcata, L.*
HAB. Campbell Island.

71. *J. argentea*, n. sp.; fronde procumbente aggregato subsimplici lineari pellucida nervosa, cellulis majoribus rotundatis margine prominentibus.
HAB. Lord Auckland's group.

Patches small, lying about the roots of *Musci* and *Hepaticæ*, silvery white. Fronds nearly three lines long, flat, with an evident midrib, sometimes having one or two patent branches, usually however simple; on some of the wider fronds the cells projecting at the margin have the appearance of irregularly set, obtuse teeth, but they really are quite conformable to the other cells. The fronds are destitute of colour. No fructification has been seen on this singular species. There is a rigidity in its habit which reminds one of certain of the Polyp tribes; but then it is possessed of roots, though rare and difficult to observe, it expands by immersion in water, and its cells seem analogous to those of other frondose *Jungermanniæ*.

(Marchantia, *Linn.*)

72. *J. polymorpha, Linn,*
HAB. Campbell Island.

On SIMMONDSIA,[*] *a new Genus of Plants from California; by* THOS. NUTTALL, ESQ.

(TAB. XVI.)

MASC. *Calyx* 5-parted. *Stamina* 10 to 12, inserted separately upon the raised base of the calyx. *Corolla* 0. *Anthers* oval, flat, 2-celled, opening lengthways, the *filaments* shorter than the anthers—FŒM. *Calyx* rather large, 5-leaved, herbaceous, imbricated. *Corolla* 0. *Germ.* conical. *Styles* simple, terminal, hirsute, 2 to 3. *Capsule* 2-to 3-celled, 2-to 3-valved, the valves septiferous in the centre. *Ovules* 2 to 3, pendulous by a short funiculus: the seed (apparently) large, by abortion usually solitary, only one of the cells fertile. [I have not seen the ripe seed].

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[*] In memory of *Thomas Williams Simmonds*, an ardent Botanist and Naturalist, who accompanied Lord Seaforth to Barbadoes about the year 1804, and died soon after, while engaged in exploring the island of Trinidad.

Simmondsia *Californica*. *Nutt. mst.* (TAB. XVI.)

HAB. Covering the sides of barren hills, in argillaceous soils, near the sea, in the vicinity of St. Diego in Upper California. Flowering in May. Probably hardy.

A low evergreen shrub, diffusely branched, the branches dichotomous, as in *Viscum ;* the leaves opposite, entire, nearly of the same appearance on either surface. Stipules none. Male flowers axillary, clustered, herbaceous; those of the female flower generally solitary.

There is little doubt but that this curious shrub belongs to the Order of GARRYACEÆ, Lindl., differing considerably in habit from *Garrya,* as well as in inflorescence; the stamens are also more numerous, and the ovary more than 1-celled; the disposition of the ovules is the same, and the structure of the seed will prove probably very similar. Our plant is at the same time also closely related to the *Putranjiva Roxburghii* of Wallich.

TAB. XVI. *Fig.* 1. Male flower. *f.* 2, 3. Back and front view of a stamen. *f.* 4. Female flower. *f.* 5. Pistil. *f.* 6. Capsule with persistent perianth. *f.* 7. Capsule bursting. *f.* 8. Transverse section of the cells. *f.* 9. Central column: —more or less *magnified.*

On APONOGETON, *and the allied Genera; by* M. PAKENHAM EDGEWORTH,* ESQ.

(*With Two Plates.* TABS. XVII, XVIII.)

There appears to be considerable confusion regarding the character and limits of the genus *Aponogeton,* as given in works of authority; I therefore beg to offer a few remarks on it, the result of some observations I made on two species which I had an opportunity of fully examining in India.

The genus at first consisted of a few species, of which A. *distachys* and A. *monostachys* are examples, having a bifurcate or simple spadix. To these have been added some simple-spiked species from India (Roxb. Fl. Ind. v. 2, p. 210), and some from the Cape with bifurcate inflorescence, while certain Madagascar plants of similar habit have been described under the name of *Ouvirandra* by Thouars (*Hydrogeton,* Pers.)—All these are referred by Endlicher in his *Genera Plantarum* to the natural order of *Saurureæ;* apparently on the authority of E. Meyer, in a paper on the structure of *Houttuynia* to which I have not been able to refer.

On finding the Indian species that I examined (A. *monostachys* and *undulatus*) were both decidedly monocotyledonous and belonging to the natural order *Naiadeæ,* (though differing from the greater part of that Order in having erect seeds and an anatropous embryo), I drew up and published in the Journ. Asiat. Soc., early in 1842, a short paper modifying the character of the genus *Spathium,* † to which these and other simple-spiked species had been referred by Endlicher. This paper was, owing to my departure from India, unfortunately so misprinted as to be totally unintelligible; and I have therefore determined to republish it here; but to make it more complete examined all the species contained in Sir W. J. Hooker's Herbarium, to which, as well as to some drawings by his son, Dr. J. Hooker, he gave me most liberal access. And in the Edinburgh Botanic Garden I obtained flowers, fruit, and germinating seeds of the A. *distachys,* which showed that it likewise is endogenous and resembles A. *monostachys* exactly in the formation of the seed; consequently that species may be restored to *Aponogeton.*

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* The present paper was prepared by Mr. Edgeworth, and in our possession, long before that on a similar subject by M. Planchon of Montpellier, which has just appeared in a recent number of the Annales des Sciences Nat. Bot. 1844, p. 107, and which cannot but tend to confirm Mr. Edgeworth in keeping *Ouvirandra* distinct from *Aponogeton.*—[ED.]

† The genus *Spathium,* as characterized by Loureiro, has no resemblance at all to *Aponogeton,* and probably does belong to the *Saurureæ.*

The character of *Ouvirandra,* as drawn up by De Caisne and published in De Lessert's Icones, would, with a few trifling alterations, accurately include the *Aponogeton undulatus* of Roxburgh.

The structure of the seed is very different between the above species. A. (Ouvirandra) *undulatus* has a large foliaceous cotyledon, which embraces a plumule of unusual size and development, while in A. *monostachys* (and *distachys*) the seed is a homogeneous mass, without any discernible plumule till the commencement of germination, when it appears protruded from a slit at the base of the long, horn-like cotyledon. Moreover, the former (*undulatus*) has submerged and ulvaceous leaves, caducous sepals, and acutely elliptic pollen, while the latter (*monostachys*) has herbaceous leaves, persistent sepals, and the pollen gibbously ovoid.

If these latter distinctions extend to the other species, as they range themselves into two groups according to the structure of their seed, they may be considered of generic importance; otherwise the Madagascar *Ouvirandra* must be united to *Aponogeton;* which would then form an assemblage of water plants with tuberculous roots (generally edible) and spadicose inflorescence. If *Ouvirandra* and *Aponogeton* be retained separate, as I should be inclined to do, they each would contain plants with simple and bifurcate spikes.

The amended character of the two genera would therefore stand as follows:

APONOGETON.

Flores hermaphroditi. *Sepala* 2 colorata, persistentia. *Stamina* 6-18; *filamentis* liberis, subulatis, patentibus, persistentibus; *antheris* bilocularibus, lateraliter dehiscentibus; *polline* gibbose-ovoideo. *Ovaria* 3-5, erecta, rostrata; *stigmate* apicali, obliquo, minuto. *Ovula* 26, basi fixa, ascendentia. *Folliculi* 3-4, introrsum dehiscentes, 1-3 spermi. *Semina* erecta, ovata, exalbuminosa; testâ duplici, exteriore herbaceâ, interiore membranaceâ. *Embryo* erectus, ascendens, anatropus, cotyledone solida, plumula inconspicua. *Cotyledon* germinans in cornu elongatur et plumula diutius e basi lateraliter fisso evolvitur, foliolo elliptico.—Herbæ *aquaticæ*, radicibus *tuberculosis*, scapis *longis*, foliis *emersis v. natantibus.*

SPECIES 1. A. *distachys.* 2. A. *semicylindraceus.* 3. A. *dispermus.* 4. A. *angustifolius.* 5. A. *echinatus.* 6. A. *monostachys.*

6. A. *monostachys;* foliis lineari-oblongis emersis, floribus in spadice simplici spiraliter dispositis dense confertis.

Radix tuberculosa, fibrillis crassis ad apicem tuberculi singuli sphærici. Folia petiolata, petiolis longis, subtrigonis, basi membranaceis interiore amplectentibus, laminis lineari-oblongis, obtusis, basi sub-cordatis v. junioribus cuneatis, 5-nerviis cum venis transversalibus. Scapus longus cylindricus. Spadix cylindricus,* simplex. Flores densè spiraliter dispositi; sepalis binis obovatis, basi oblique cuneatis cœruleis; junioribus imbricatis. Stamina 6, filamentis crassis sepalis sub-longioribus; antheris cœruleis subquadratis, bilocularibus, lateraliter dehiscentibus; polline gibbosè ovoideo, luteo. Folliculi læves, seminibus 2-4 (2-3 abortientibus) erectis, ovatis, 8-costatis; testa exteriore herbaceâ viridi, laxa, facile separabili; interiore ad embryonem arcte adpressa, brunnea, leviter striata, in uno latere raphe viridi; chalazâ magnâ viridi.

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* Roxburgh describes the rachis as waved; but I could not find this appearance nor could I detect the spathe, which if it exist must fall off extremely early.

OUVIRANDRA. *Thouars, De Caisne* in De Lessert.

Flores hermaphroditi. *Sepala* 2 (3) colorata, decidua. *Stamina* 6, persistentia; *filamentis* subulatis, infernè dilatatis; *antheris* basi affixis bilocularibus, lateraliter dehiscentibus; *polline* acutè ellipsoideo. *Ovaria* 3-4, lageniformia, in stylum brevem, *stigmate* obliquo, sub-apicali, facie infernâ notatum desinentia, unilocularia, 2-6 ovulata, ovulis basi affixis, adscendentibus, anatropis. *Folliculi* rostrati. abortu 13 spermi, introrsim dehiscentes. *Semina* exalbuminosa, testa herbacea, membrana interiore tenui. *Embryo* rectus, ascendens, *cotyledone* crassa foliacea v. excavata *plumulam* maximam bifoliam amplectente.—Herbæ *aquaticæ, tuberculosæ,* foliis *radicalibus venosis submersis.* Scapi *elongati,* spicas *singulas binas ternasve gerentes.* Spatha *caduca.*

SPECIES.

Spicæ ternæ.

1. O. *Bernieriana.*

Spicæ binæ.

2. O. *fenestralis.* 3. O. *Senegambica.*

Spicæ singulæ.

4. O. *crispa.* 5. O. *pusilla.* 6. O. *Macraeæ.* 7. O. *undulata.*

7. O. *undulata*; foliis breve petiolatis lineari-oblongis submersis ulvaceis, floribus in spadice post anthesin elongato sejunctis, sepalis caducissimis.

Radix tuberculosa, fibrillis paucis crassis ad apicem tuberculi unici subsphærici. Folia plurima, radicalia, lineari-oblonga basi cuneata undulata; lamina petiolo longiore et in eum decurrente, nervo medio crassiore, lateralibus 2-4 parallelis, venis transversalibus; vernatione involuta. Flores numerosi, in spadice cylindrico spiraliter dispositi, primo conferti, demum rachide elongatâ sparsi; scapo longissimo ex aquâ emerso. Spatha acuta, ante anthesin decidua. Sepala duo, subspathulata, basi quasi unguiculata, colorata (lacteo-alba), caducissima, staminibus duobus lateralibus opposita. Stamina 6; filamentis erectis, divaricatis, carnosis, persistentibus; anthera biloba, lateraliter dehiscente deciduo, e flavo-cœrulescente; polline acutè elliptico, luteo. Pistilla 3, ovario superiore libero; stigmate sub-terminali. Folliculi 3, divaricati, dispermi; seminibus erectis, umbilico brevi; testa lævi; membrana interiore tenuissima. Embryo erectus; cotyledone concava, carnosa, plumulam amplectente; plumula maxima bifolia, foliis inæqualibus margine involutis.

REFERENCES TO BOTH PLATES.

TABS. XVII, XVIII.

a, A single flower, seen sideways.
b, Ditto from front, shewing the two bracts in situ.
c, Stamen.
d, A single bract.
e, Flower.
f, Flower after inflorescence; capsule nearly ripe with persistent bracts and stamens.
g, Another more magnified, resting on the side.
h, Section of ditto, showing its two cells placed back to back.
i, Pollen, in Tab. xvii. gibbous (in Tab. xviii, *j*, globose, when under the influence of iodine).
k, Pistil, with oblique terminal stigma.
l, Ditto, section showing ovaries in situ.
m, *m*, Capsules.
n, Section of ditto.
o, Seed.
p. Ditto, magnified.
q, *q*, Ditto, outer coat taken off, showing the raphe and chalaza in different views.
r, Embryo, all the coats taken off.
s, Second coat taken off, striated, dark-brown, chalaza green.
t, Transverse section of seed, shewing eight ribs of outer coat.
v, Longitudinal section of capsule.

u, (Tab. xvii.) Longitudinal section of embryo.
u, (Tab. xviii.) Transverse section of embryo.
w, Germinating seed.
x, Longitudinal section of ditto.
α, Germinating seed further advanced.
y, Plumule extracted from *α*.
z, The same, more highly magnified.
β, *γ*, *δ*, *ε*, Progressive states of germinating seed.
ζ, Part of a leaf, *magnified*, to show the nervation, seen from the upper surface.

CHAMPIA TASMANICA; *a new Australian Alga; by* W. H. HARVEY, ESQ., M.D. M.R.I.A.

(*With a Plate—Tab. XIX.*)

CHAMPIA TASMANICA.

Fronde compressâ subbipinnatim ramosâ, pinnis elongatis patentibus plerumque oppositis basi attenuatis, pinnulis clavatis distantibus oppositis vel alternis nunc ad axillas pinnarum fasciculatis; articulis diametro duplo brevioribus.

Champia Tasmanica, *Harv. in Hook. Lond. Journ. of Bot. in note, t.* 2, *p.* 190. *Endl. Gen. Pl. Suppl. III, p.* 43.

HAB. On the shores of Van Diemen's Land, Port Arthur, *Mrs. Smith.* Circular Head, *Ronald Gunn, Esq.*

Root a mass of branching fibres. *Fronds* tufted, 4-6 inches high, about ½ a line in diameter, compressed, simple or divided near the base, furnished through the whole length with opposite, or occasionally ternate or whorled, rarely alternate branches, from whose bases sometimes several clustered ramuli spring; branches much contracted at their insertion, 2-3 inches long, simple, either bare of ramuli or furnished with a few opposite or scattered pinnules, filiform, obtuse, by no means tapering to the apex. *Fruit* unknown. *Joints* half as long as broad. *Colour* a fine full pink.—*W. H. Harvey.*

Tab. xix. *f.* 1. Champia Tasmanica, nat. size. 2. Portion of the stem, magnified. 3. Longitudinal section of ditto, showing the internal diaphragms connected by jointed filaments, as in others of the Genus, magnified. 4. One of the diaphragms, magnified.

A Few Remarks on CLAUDEA ELEGANS; *by* W. H. HARVEY, M.D. M.R.I.A.

(*With a Plate—Tab.* XX.

Of all the marine *Algæ* there is none to which a greater interest attaches than to the *Claudea elegans* of Lamouroux, (*Fucus Claudei*, Turn. Hist. Fuc. t. 243.) Its extreme rarity, the great length of time which has elapsed since the only specimens hitherto seen in Europe were gathered by the unfortunate Peron, and the uncertainty so long attached to its exact *habitat*—("on the coast of New Holland" being rather a vague direction) :—these circumstances, combined with its beauty and extraordinary structure, have long made it to Sir William J. Hooker and myself the Algological treasure that we most wished to possess. Our delight may then be imagined when in a parcel which has just reached Sir William from Ronald Gunn, Esq., we find *three* fine specimens of *Claudea elegans*, *two* of them bearing an abundance of *capsular* fruit (or *keramidia*). One of these specimens, Sir William has, with his usual kindness, presented to me, and as the capsular fruit of *Claudea* has never before been seen by botanists, a short description of it, with an accompanying figure, may be interesting.

The three specimens now received from Mr. Gunn were gathered by him in January, 1843, on the coast near George Town, Van Diemen's Land. Besides these, I only know that two others exist in Europe, one in the Paris Herbarium, from which Turner's plate was drawn, the other in the rich collection of Robert Brown, Esq. These latter specimens are plentifully sprinkled over with *sphærosporous* fructification (*stichidia*), as figured by Turner and Lamouroux, and described by various other authors. Our specimens on the contrary are, two of them furnished with *sporideous* fructification (Keramidia); the other is scarcely in fruit, but in one of its leaves there are two sphærosporous receptacles, or stichidia.

The Keramidia or capsules are large, membranous, somewhat inflated, mammillæform, furnished with a perforated nipple, and they contain a dense globular mass of pyriform sporidia fixed to the apices of filaments which issue from a central placenta. They are placed at the apex of short, secund ramuli which spring from the lower part of the rachis of a leaf; or, morphologically speaking, the pectinate ribs of what should normally be a fenestrated leaf, destitute of connecting bars, are shortened, widened and inflated on one side near the apex, but below the extreme point; and produce from a point on their midrib, within the inflated portion, a cluster of sporidia; the inflated portion forming, as above described, the membranous pericarp of the keramidium. Sometimes the whole leaf is converted into a raceme of such pedicellated capsules, and sometimes of two leaves which arise from the same point of the stem, one is entirely changed into capsules, the other developed into a falcate net-work as in other parts of the plant.

It appears to me that Mr. Agardh, Jun. is correct in referring *Claudea* to the *Rhodomeleæ*, notwithstanding some minor discrepancies, which have induced M. Decaisne to place it in a separate family which he calls *Anomalophylleæ*. The keramidium described above bears a very strong resemblance to that of *Dasya*, and though the vegetation of *Claudea* is very remarkable, yet its structure is not so anomalous as at first sight it seems to be, nor do I think the mere circumstance of its ramuli being united into a net-work sufficient of itself to constitute a distinct family. It is on a difference in fructification, however, that M. Decaisne chiefly insists; and certainly he has had much fuller opportunities of studying the *stichidia* than I possess, and to these organs he appears to attribute a higher place in classification than to the keramidia; for I find that he separates *Dasya* from the neighbourhood of *Polysiphonia*, to associate it with *Callithamnion*. This does not appear to me a natural arrangement while such a plant as *Polysiphonia byssoides* exists, which presents the stem and fruit of a *Polysiphonia*, with the single tubed, byssoid ramuli of *Dasya*.

As the frond of *Claudea* is proliferous, its divisions, as its growth extends, are but a repetition of the first formed frond, the whole consisting of a congeries of falcate, unilateral, seemingly skeleton leaves, every new leaf springing from the back of the midrib of the older leaf. By explaining therefore the formation of a single leaf, we shall learn that of the whole frond. If we take a full grown leaf for the purpose of examination we can learn but little from it, the processes of metamorphose having been completed, and we shall be liable to fall into erroneous conjectures on the subject. But by taking off a young leaf which is not yet unrolled from its circinate vernation, and is still but an eighth of an inch in length, the manner of growth in this remarkable plant may be very clearly seen. At this age the future leaf is found to consist of a lanceolate lamina, furnished with a strong midrib, acute, and resembling the leaf of *Delesseria hypoglossum* in form, rolled inwards at the apex, in a circinate manner; its midrib producing at right angles with the lamina, and on the surface towards which the apex rolls, a series of processes or leaflets (the nervures of the future leaf) of similar form and structure to the leaf from whose midrib they spring, set at equal distances to each other, and continuing from a short way above the base of the leaf to its apex. As these leaflets increase in size, the lowest in the series emits from its midrib along the upper face, a similar series of processes, which, springing from it upwards and lengthening, meet with the back of the leaflet placed next in order above, and parallel with it, and become united to it, forming a series of bars; and this process goes on until all the leaflets are linked together. Finally a similar connection by processes occurs among the bars, and the net work of the leaf is then ready to unroll and expand. In the leaflet which I examined, and which I explain as above, the processes or leaflets near the apex, and for a long way below it, were perfectly distinct from each other, merely being subulate teeth pectinately inserted, gradually increasing in length, and becoming of a lanceolate form as they were farther from the apex; those next them had teeth in various stages of development, proceeding from their midribs on the upper surface; and only the lower ones were united by bars, and these only in their lower parts. This I have endeavoured to make more clear in the accompanying figure. What I have above called "*leaf*" or the lanceolate lamina, becomes eventually the rachis of the compound leaf, and finally the stem; the *leaflets* become the main nerves of the net-work, or, in fertile plants, the stalks of the capsules.—W. H. H.

EXPLANATION OF THE PLATE.

1. Portion of frond, *nat. size*, showing the capsules. 2, 3. Different magnified views of capsule or keramidium. 4. Globule of seeds. 5. Cluster of seeds taken from the globule. 6. Young leaf, *nat. size*. 7. Same *magnified*. 8. Apex of *magnified*, unrolled.

Catalogue of the names of a Collection of Plants made by Mr. Wm. Stephenson *in* New Zealand; *by* J. D. Hooker, M.D. R.N. F.L.S.

Some thirty years have now elapsed since the first publication of a few dried specimens of plants, by Mr. Don of Forfar, was considered a great boon to the Naturalist: but now the study of Botany is so extensively pursued, both at home and abroad, that travellers visit distant regions for the sole purpose of collecting and transmitting to their native country dried plants on sale at moderate prices: whilst others, called, abroad by various duties, still render an essential service to Botany at home, by paying some attention to the collecting of materials for the use of scientific men in England and on the continent. Mr. Stephenson will rank amongst the latter number. Every one knows how much additional value is stamped upon such collections by having them named; and being engaged in the preparation of a Flora of New Zealand, it has not proved a very difficult task to draw up such a list of Mr. Stephenson's first envoi as may be useful to many who possess this Herbarium. The *Grasses* and *Pimeleæ* must not be considered as definitively settled in regard to their nomenclature: they, and a few species of other families, will require more time for their correct determination than it is now in our power to command. The numbers correspond to those distributed with the specimens; and these latter were, we believe, all gathered in the neighbourhood of Wellington.

1. Asplenium *bulbiferum*, Forst.—This specimen in common with others I have seen from New Zealand, is not proliferous, and hence perhaps not truly distinct from *A. laxum*, Br.—Vid. Brown, Prodr. p. 151.

2. Lomaria *discolor*, Willd.
3. Aspidium *hispidum*, Sw.
4. Lycopodium *volubile*, Forst. (barren).
5. Cænopteris *flaccida*, Sw.
6. Polypodium *tenellum*, Br.
7. ——— *Billardieri*, Br.
8. Asplenium *falcatum*, Sw.
9. ——— *lucidum*, Forst.
10. Lomaria *procera*, Spr., (Barren frond).
11. ———, (Fertile and barren frond).
12. Todea *pellucida*, Hook.
13. Adiantum *affine*, Willd.
14. Pteris *macilenta*, A. Rich.

15. Lomaria *pimpinellæfolia*, Hook. fil.; caudice longissimo filiformi scandente atro squamoso, squamis sparsis subulatis patentibus, stipitibus gracilibus remote squamulosis, frondibus lanceolatis pinnatis, pinnis remotis alternis v. sub-oppositis ellipticis sessilibus basi obliquis pinnatifido-serratis membranaceis, laciniis obtusiusculis supremis decurrentibus confluentibus, rachibus pilosis.

For our first knowledge of this plant we are indebted to Mr. Frazer, but it has since been found abundantly in various parts of the Northern Island, and especially in the neighbourhood of the Bay of Islands: nowhere, however, in a state of fructification, whence probably it has remained undescribed by Mr. Cunningham. It is closely allied, both in habit and general appearance to the *L. filiformis,* Cunn., and, like it, invariably is found climbing the living trees, often to their summits. In the membranaceous shorter pinnæ, rounded at the apex, and in the small size, it differs remarkably from that species. The name is given on account of the strong similarity which the fronds bear to the pinnated leaves of *Pimpinella Saxifraga,* or to *Rosa pimpinellæfolia.*

16. Polypodium *tenellum,* Br.
17. ——— *pustulatum,* Spr.
18. ——— *pustulatum,* Spr.
19. Hymenophyllum *demissum,* Sw.
20. Aspidium *hispidum,* Sw.
21. Polypodium *viscidum,* Colenso in Tasmanian Philosophical Journal.
22. Hymenophyllum *polyanthos,* Sw.
23. Parsonsia *heterophylla,* A. Cunn.
24. Myoporum *lætum,* Forst.
25. Brachyglottis *repanda,* Forst.
26. Clematis *hexasepala,* DC.
27. Metrosideros *florida,* Sm.
28. Gaultheria *antipoda,* Forst.
29. Leiospermum, *racemosum,* Don.
30. Parsonsia *heterophylla,* A. Cunn.
31. Brachyglottis *Rani ?* A. Cunn.
32. Panax *arboreum,* Forst.
33. Leiospermum *racemosum,* Don.
34. Myoporum *lætum,* Forst.
35. Carmichaelia *australis,* Br.
36. Pimelea *virgata,* Vahl.
37. *P. prostrata,* Vahl.—These specimens agree with others of a very common Bay of Island plant, which Mr. A. Cunningham sent home, under the name of *P. arenaria, mss.*; but is very different from the ordinary forms of that species, (No. 59 & 60). It is, however, liable to great variation, the branchlets being often very tortuous, and hairy or silky, and the leaves more or less densely and quadrifariously imbricated ; the P. *Urvilleana,* A. Rich, is hardly distinct from this.

38. Viscum *antarcticum*, Forst.
39. Coriaria *sarmentosa*, Forst.
40. Friesia *racemosa*, A. Cunn.
41. Leptospermum *scoparium*, Forst.
42. Clematis *hexasepala*, D.C.
43. Vauthiera *australis*, A. Rich.
44. Carex *Forsteri*, Wahl.
45. Lepidosperma *elatior*, A. Cunn., not Labill.
46. Juncus *effusus*, L.
47. Luzula *picta*, A. Rich.
48. Isolepis *spiralis*, A. Rich.
49. Agrostis *crinita*, Br.
50. Torresia *redolens*, Roemer and Schultz.
51. Festuca *littoralis*, Lab.

52. Scirpus *foliatus*, Hook. fil.; parvus, cæspitosus, simplex v. ramosus, culmis procumbentibus ad nodos sæpe radicantibus et proliferis filiformibus striatis, foliis alternis linearibus obtusis basi vaginatis (vaginis brevibus laxis striatis) supra planis subtus dorso linea prominente, pedunculis in axillis superioribus folio brevioribus, spicula minuta biflora, squamis 2 exterioribus vacuis, setis hypogynis 4-6, stylo cum ovario continuo.—This little plant was first, I believe, detected by myself in holes of rocks near the falls of the Keri-Keri river, and afterwards gathered abundantly both by myself and by Mr. Colenso in moist places in the neighbourhood of the Bay of Islands.

Radix fibrosa. *Culmi* filiformes, cæspitosi, graciles, flexuosi, 2-6 uncias longi, angulato-striati, basi præcipue radicantes et proliferi, virides; internodiis 2-4 lineas longis, usque ad apicem foliiferis. *Folia* anguste linearia, obtusa, internodiis longiora, patentia, sub lente minute cartilagineo-serrulata, supra plana, subtus linea media carinata, basi vaginantia; vaginis cylindraceis striatis laxiusculis purpureo-fuscis 1-2 lin. longis, ore obliquo glabro. *Pedunculi* solitarii, v. bini, brevissimi, in foliis superioribus axillares. *Spicula* parva, 2-3-flora, ovato-lanceolata, squamis 4-5 lanceolatis, 2 exterioribus minoribus vacuis viridibus, reliquis longioribus floriferis sæpe purpureo-fusco pictis, omnibus complicato-carinatis, dorso majus minusve serrulatis marginibusque viridibus. *Stamina* 3, paululum exserta. *Setæ hypogynæ* 4-6, lineares, sursum scabræ, inæquales, ovario sub duplo longiores. *Ovarium* ovatum, cum stylo continuum. *Stigma* 2-3 fidum, laciniis subulatis, pilosis.

This plant has the habit of *Eleocharis fluitans*, and though agreeing with the characters of the genus *Scirpus*, as at present constituted, it does not resemble any of the species with which I am acquainted.

53. Isolepis *setaceus*, L.

54. Poa *imbecilla*, Sol. mss. and A. C.?

55. Carex *collata*, Boott.

56. Solanum *laciniatum*, Ait.

57. Coprosma *lucida*, D.C.

58. Myoporum *lætum*, Forst.

59. Pimelea *arenaria*, A. C.—var., foliis minoribus lato-elliptico-ovatis obtusis concavis, caule subprostrato.—A smaller plant than No. 60; assuming a form intermediate between that of the ordinary state of the species and the smaller leaved one. Some of the branches have turned of a bright verdigris colour, a character it has in common with some others of the genus.

60. P. *arenaria*, A. C. in Bot. Mag. t. 3270.—P. villosa, *Banks and Sol. Mss.*—var. foliis ellipticis acutis subtus ramulisque densius sericeis.

Except in the leaves being rather narrower and more silky, this quite agrees with the specimen figured in the Bot. Mag., and seems different from the preceding; but the species of *Pimelea* are very variable.

61. Euphorbia *glauca*, Forst.

62. Linum *monogynum*, Forst.

63. Coprosma *retusa*, Banks and Sol. mss. in Mus. Brit.; ramulis subtetragonis, foliis oblongis v. subrotundis ellipticis obtusissimis carnosis subtus pallidioribus, pedunculis brevibus axillaribus compositis, floribus capitatis, fructibus (magnis) subrotundis (siccitate pyriformibus profunde bilobis).

This plant was first pointed out to Dr. Sinclair and myself by Mr. Colenso, growing on rocks near the sea, and forming a low sparingly leafy tree. I was inclined to include it under the C. *lucida* as a variety, but the smaller, shorter, more obtuse, and singularly carnose leaves seem constant characters in specimens from different localities.

64. Myrsine *Urvillei*, Alph. DC.

65. Coprosma *lucida*, DC.; C. grandifolia, *Hook. fil.* Pelaphia grandifolia, *Banks and Sol.*

66. Myrsine *salicifolia*, Heward, Mss.

67. Elæocarpus *Hinau*, A. Cunn.

68. Solanum *laciniatum*, Ait.

69. Parsonsia *heterophylla*, A. Cunn.

70. Libertia *ixioides*, Spr.

71. Pteris *esculenta*, Forst.

72. Todea *pellucida*, Hook.

73. Metrosideros *florida*, Sm.

74. Podocarpus *ferruginea*, Don.

75. Anagallis *arvensis*, L., (Introduced.)

76. Acæna *Sanguisorbæ*, Vahl.

77. Dracophyllum *latifolium*, A. Cunn.

78. Earina *mucronata*, Lindl.

79. Agrostis *æmula*, Br.

80. Danthonia *pallida*, Br.

81. Aciphylla *squarrosa*, Forst.

82. Hymenophyllum *demissum*, Sw.

83. Polypodium *pustulatum*, Spr.

84. Aspidium *pennigerum*, Sw.

85. Cyathea *dealbata*, Sw.

86. ——— *medullaris*, Sw.

87. Ditto ditto.

88. Lycopodium *Flagellaria*. A. Rich.

89. Clematis *indivisa*, Willd.

90. Pterostylis *Banksii*, Br.

91. Orthoceras *strictum*, Br.

92. Cassinia *retorta*, A. C. in D.C. Prodr.—Calea cinerea, *Banks and Sol.* (Barren).

93. Pimelea *prostrata*;—var. *quadrifaria*, foliis arcte quadr

fariis imbricatis late obovatis obtusis concavis glabris, ramulis petiolis brevibus persistentibus foliorum lapsorum creberrime tuberculatis.

This is not an uncommon plant in the neighbourhood of the Bay of Islands, especially near the sea, it is also found on the mountains of the interior.

94. Convolvulus *sepium*, L.

95. Hedycarya *dentata*, Forst.

96. Friesia *racemosa*, A. Cunn.

97. Juncus *planifolius*, Br., *var.* panicula capitata.

98. Leptocarpus *simplex*, Br.

99. Carpodetus *serratus*, Forst.

100. Cyperus *ustulatus*, A. Rich.

101. Poa *australis*, Br.

102. Danthonia *pallida*, Br.

103. Carex *dissita*, Sol.

104. Arundo *australis*, A. Rich.

105. Carex *collata*, Boott.

106. Agrostis *ovata*, Br.

107. Dacrydium *cupressinum*, Sol.; foliis ramisque elongatis.

108. Agrostis *æmula*, Br.

109. Dacrydium *cupressinum*, Sol.; foliis brevioribus ramisque abbreviatis.

110. Uncinia *riparia*, Br.

111. Alopecurus *agrestis*, L. (Introduced).

112. Juncus *planifolius*, Br.; panicula laxa.

113. Poa *annua*, L. (Introduced.)

114. Carex *lucida*, Boott.

115. Carex *polystachya*, A. Rich.

116. Triticum *squarrosum*, Banks and Sol. in Mus. Brit.; foliis involutis glaucis lævibus v. marginibus tantum scaberulis, glumis lanceolatis nervosis sub 5-floris, floribus remotis, palea inferiore dorso carinata 5-nervi in aristam longissimam scabridam recurvam desinente, superiore apice integra bicarinata, carinis scabrido-ciliatis.

Culms about a foot long, nearly erect, slender, more or less glaucous. Leaves striated, nerved, narrow and somewhat recurved; the ligula short, semicircular and scariose. Spikes 3-4 inches long, with about 5 spikelets, which are at right angles to the rhachis. Spikelets nearly an inch long, exclusive of the awns, which are themselves 1½-2 inches long, and recurved when dry.—A very conspicuous and distinct grass, first discovered by Sir J. Banks and Dr. Solander at Totaranui on the East coast, and more recently by Dr. Sinclair: it is allied to the T. *scabrum*, Br.; but is much larger, either than the specimens which we possess of that plant from Labilladiere and Sieber (Agrost. n. 95.) or than the figure given by the former voyager, which represents a larger plant than the specimens are in reality, and with longer awns.

117. Juncus *planifolius*, Br.
118. Isolepis *acicularis*, Br.
119. Holcus *lanatus*, L. (Introduced.)
120. Lindsæa *Lessonii*, A. Rich.
121. Davallia *Novæ Zelandiæ*, Colenso in Tasman. Journ. of Nat. Hist. &c.
122. Niphobolus *rupestris*, Spr.
123. Cænopteris *flaccida*, Forst.

BOTANICAL INFORMATION.

Botany of the Antarctic Voyage.

The first Part of Dr. Hooker's *Antarctic Flora* appeared on the first of the present month, (June). After a preface, which gives a sketch of the track of the Discovery Ships, it commences, as was previously announced, with the plants of Lord Auckland's and Campbell's Islands,—a small group extending from 50°½ to 52½ S. Lat., and 166° to 169° E. Long., lying to the Southward of New Zealand. This, too, is prefaced by a short sketch of the appearance of the islands, and general nature of their vegetable productions. Three species of *Ranunculus* are described; of which one had been previously found in New Zealand:—four of *Cardamine*;

one, the *C. hirsuta* of Linnæus, so universally diffused throughout the world: 2 *Stellariæ;* one European, *S. media.* One *Drosera* is noticed: one *Geranium,* a beautiful little *Sieversia:* 2 *Acænæ;* one *A. Sanguisorbæ* common to South Australia and Tasmania; the other *A. adscendens,* common to Antarctic America, the Falkland Islands and Kerguelen's Land: three species of *Epilobium,* of which two also grow in New Zealand: *Callitriche verna:* one *Metrosideros,* (Sect. Agalmanthus): *Montia fontana:* three species of *Colobanthus,* of which one only is new: one *Builliarda, B. moschata,* D'Urv.: two remarkable *Umbelliferous plants;* one a *Pozoa* (*P. reniformis,* n. sp.), and a new Genus, *Anisotome,* (*A. latifolia,* n. sp.); another species of the latter is *Ligusticum antipodum* of Hombron and Jacquinot. The plates are well executed, and consist of 1. *Ranunculus pinguis,* n. sp.; 2. *R. acaulis,* Banks and Sol.; 3. *Cardamine depressa,* n. sp.; 4. *Cardamine stellata,* n. sp.; 5. *Geranium microphyllum,* n. sp.; 6. *Epilobium linnæoides,* n. sp.; 7. *Sieversia albiflora,* n. sp.; 8. *Anisotome latifolia.* The coloured copies are particularly beautiful. The first Part is further accompanied with a chart of the south circumpolar regions, showing the tracks of Cook (1773-1775), Weddell (1822-1824), and Ross (1839-1843); and there is a very pretty woodcut on the title page, representing the Mounts Erebus (active Volcano) and Terror, and the Victoria barrier and lands, in lat. 78° south.*

SIEBOLD; FLORA JAPONICA; *Sectio prima,* Plantæ ornatui vel usui inservientes: digessit DR. J. G. ZUCCARINI.

The residence of Dr. Siebold, for a length of time, in Japan, which has been hitherto a sealed country to the Naturalist, his captivity there, and the hardships he underwent, are familiar to most of our readers. He, at length, returned to his native country with a large collection of objects of Natural History, which are in a course of publication. Of the Botany, the first volume, consisting of twenty Fasciculi in large quarto, and three Fasciculi of the second volume, with numerous well executed plates, accompanied by careful analyses and descriptions from the pen of Professor Zuccarini of Munich, are now before us. To Botanists and Cultivators of our island, the work possesses peculiar interest; especially since Dr. Siebold has been the means of introducing many of the plants to the European gardens, and because we know that they will frequently bear our winters: for though the islands of Japan are situated in a much more southern latitude than England, the remark of Dr. Siebold must be borne in mind; "It should be recollected, as we have had frequent occasion to remark, that the eastern countries in Asia are very far colder than those under the same degree of latitude in Europe, and this holds equally good in Japan. In lat. 32° N. the mercury falls in winter so low as 2° or 3° below zero of Reaumur's thermometer, and the mountains are often covered with snow, which lies unmelted for a week; in 38° or 40°, the rivers are so set fast as to be crossed on foot; while on the Island of Jezo, (in lat. 43°, 45°), the natives are frequently compelled to take refuge, during winter, in caves of the earth."

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* While the above is in the press, the Second Part of this Work has appeared, a notice of which we must defer to a future Number of our Journal.

We shall mention the several plants that are figured in this work, which is published without any systematic order, and commences with:—

1. Illicium *religiosum*, Siebold.—This we also had the opportunity of figuring in the Botanical Magazine, Tab. 3966, a plant introduced to the Royal Botanic Gardens at Kew, by Mr. Makoy of Liege.

2. Quercus *cuspidata*, Siebold.

3. Forsythia *suspensa*: a pretty shrub of the order *Jasmineæ*, introduced to the gardens of Japan, from China.

4. Anemone *cernua*, Th. 5. A. *Japonica*, n. sp.

6. Deutzia *crenata*, n. sp. 7. D. *scabra*, Th. 8. D. *gracilis*, n. sp.

9. Rhododendron *Metternichii*, Siebold.

10. Paulownia *imperialis*, Siebold. (Bignonia tomentosa, *Th.*); so named in compliment to Her Imperial and Royal Highness, the hereditary Princess of Holland. The "*Kiri*" is one of the most magnificent vegetable productions of Japan. Its trunk with a diameter of 2-3 feet rises to the height of 30 or 40, and divides into branches, few in number, but thick and given out at right angles, forming a noble crown. The broad and large foliage is opposite, each leaf borne on a footsalk, heart-shaped at the base, oval and quite entire, or divided into three unequal lobes, the middle one being the longest, sharp-pointed and clothed with whitish down. The handsome and sweet scented flowers are produced early in April, immediately after the expansion of the leaves, and being borne in immense spikes, they strongly recall those of the horse-chestnut in general aspect, while individually they resemble, in form, size, and purplish colour, the blossoms of the *Foxglove*. The capsules, which ripen in autumn, contain a great quantity of small seeds, furnished with a membranous transparent wing.

The *Kiri* grows so rapidly in its native country, that suckers, taken off and transplanted when only 3 feet high had attained to 10-15 feet during the first year, and after three years the diameter of their stems was 4 or 5 inches.

In France this tree has already shown itself to be hardy, flowering in the open air; but it must be confessed that the plant we possess in the Royal Botanic Gardens, presented by His R. H. the Prince Albert, although it is of free growth in a cool greenhouse, bears such herbaceous branches that we are fearful of exposing to our winter's frosts such tender-looking shoots.

11. Prunus (Armeniaca) *Mume*, Siebold, (Amygdalus nana, *Th.*)—The "*Mume*" is dispersed throughout Japan, but thrives best in the northern parts, where it grows 15 or 20 feet high, and bears much resemblance to an apricot-tree. In a wild state, and when planted for hedges, its aspect is only that of a thick and much branched shrub, about 12 feet

high. It is frequently cultivated in fields and gardens, both for the beauty of the flower, and useful quality of its fruit.

In favourable seasons the "*Mume*" is covered with blossoms early in February, and these are gathered and wreathed round the altars of the Idols, while the natives adorn all their dwellings with its blooming branches, as emblems of returning spring. In a wild state, the flowers are white, but they vary on cultivated trees with every shade of pink and red, and even sometimes partake of yellow and green. The most esteemed varieties of the tree are such as have double flowers, and they are grown, in a dwarf state, in gardens, round the houses, and even close to the temples. The richest collection of these varieties, amounting to several hundreds, belongs to Prince Tsikusen, and his kindness has allowed us to take drawings of the finest and scarcest sorts. It is incredible what a passion the Japanese have for dwarf trees, which renders the cultivation of the "Mume," one of the most lucrative branches of horticulture in the empire. Grafting is the usual process, and this is sometimes accomplished in a manner which makes the branches droop towards the ground, like a weeping-willow. One of these curious specimens was brought to us for sale by a merchant of growing plants, it was in flower, yet not quite 3 inches high. This *chef d'œuvre* of gardening skill was grown in a small painted box, made with three stories, similar to those for drugs, which the natives wear in their girdles. In the top row was the said "*Mume;*" in the middle an equally diminutive fir; and at the bottom a bamboo, scarcely an inch and a half high.

The "Mume" always figures in the legends of Japanese saints, poets, and illustrious men, and is even regarded as a sacred tree, pilgrimages being made to the ancient trunks, beneath whose shade the apotheosed Princes and Poets had reposed, and chaunted their inspired lays. The small grafts obtained from such sacred trunks are held of equal value as the parent trees.

In June the fruit is ripe, but when perfectly mature, the taste becomes so insipid that it is more usual to pickle them green as cucumbers are done with us. In this state, they are eaten as a sauce to rice and fish; but though highly esteemed by the natives, it is seldom an European can relish their sour and bitter flavour. It is usual to tinge them of a reddish hue by mixing the blossoms of *Ocimum crispum* with them, when they are preserved. The juice of the green fruit affords a refreshing drink in fevers, and is indispensable for giving the beautiful pink hue to the *Bastard Saffron*, prepared in Japan.

A note on the Genus of this plant will no doubt be found very correct; "Genere *Prunus, Cerasus, Armeniaca, Persica, certis* terminis circumscribere non licet, nam omnes notæ quas pro separandis generibus a putaminis figura deducere auctores conati sunt, in speciebus habitu diversissimis mixtæ occurrunt et sine limite confluunt."

12, 13. Lilium *speciosum*, Th.—This plant, and several of its varieties, is now well known in our gardens.

14. Lilium *cordifolium*, Th.; nearly allied to L. *giganteum*, Wall., from Nepal, and with it forming a small section called *Cardiocrinum* by Endlicher.

15. Citrus *Japonica*, Th.

16. Benthamia *Japonica*, n. sp.

17. Kadsura *Japonica*, Dun.

18. Stachyurus *præcox*, Siebold; a new genus of *Pittosporeæ*.

19. Corylopsis *spicata*. 20. C. *pauciflora*, Siebold. — A new genus of *Hamamelideæ*, nearly allied to *Hamamelis* and *Parrotia*.

21. Boymia *rutæcarpa*, Adr. de Juss.

22. Prunus *tomentosa*, Th.

23. Styrax *Japonicum*, n. sp.

24. Symplocos *lucida*, Siebold (Myrtus lævis, *Th.*)

25. Aralia *edulis*, Siebold (Aralia cordata, *Th.*)

26. Schizophragma *hydrangeoides*, Sieb.; a new genus of *Hydrangeæ*, allied to *Broussaisia*, to which natural family also belongs

27. Platycrater *arguta*, Siebold.

28. Rosa *rugosa,* Th.

29, 30. Diervilla *hortensis,* n. sp. 31. D. *grandiflora,* Siebold (D. Coræensis, *Th.*) 32. D. *floribunda,* n. sp. 33. D. *versicolor,* Siebold (D. *Japonica,* DC.)

34. Abelia *serrata,* n. sp.

35. Ligularia *Kæmpferi,* n. sp.

36. Ligularia *gigantea,* Siebold (Tussilago Japonica, *L.*) a fine *autumnal* flowering plant, now in our Botanic Gardens, where I believe it has not blossomed.

37. Viburnum *plicatum,* Th. 38. V. *tomentosum,* Th.

39, 40. Trochodendron *aralioides,* Siebold ; a new plant of *Winteraneæ,* Br., with the habit of some simple-leaved *Aralia* or *Hedera.*

41. Lilium *callosum,* n. sp. The bulbous roots both of this *Lily* and of *Lilium tigrinum,* equally wild in Japan, are gathered in autumn and eaten either boiled or baked, being highly nourishing, farinaceous, and agreeably tasted.

It were well that greater attention were paid to the nutricious quality of Lily roots in general. Many of the species multiply prodigiously by their bulbs, even in the most sandy and barren soils, and might afford a valuable article of subsistence, like the *Salauga* (*Lilium Kamschaticum*) which is indispensable to the natives of that country, and some other species on which the aborigines of the Kurile Islands mainly depend for food.

42. Aronia *Asiatica,* n. sp.

43. Wisteria *Japonica.* n. sp. 44. W. *Sinensis, D.C.* With the latter shrub we are familiar in this country. Dr. Siebold observes of it : "When once the "Fudsi," the native name, "has come into flower, all classes of society collect under the bowers that are made from it. This is in April and May ; there the people amuse themselves in dancing, singing, and instrumental music, and while they compose scraps of extemporaneous poetry in honour of their favourite flowers, they quaff large libations of Sahi, the beverage of the country, made from rice, and hang their strips of written verses upon the largest bunches of blossoms. Japanese

literature abounds with pleasing and witty allusions to the lovely *Fudsi,* type of spring, and paintings are common representing the shrub in flower; on festive occasions, these pictures are suspended above the seat of honour. Kæmpfer, that faithful chronicler of the prevailing customs in those countries which he visited, has mentioned many usages appertaining to the *Fudsi,* among which we only quote one, still practised by youthful lovers. On our journey to Jeddo, we observed, in the court of a temple, that to several bunches of the unexpanded flowers of the *Fudsi* little billets on differently coloured papers, were attached; and we heard that they were so placed by the young persons who took the more or less vigorous expansion of the branches as a presage of their future unions, as accompanied with greater or less degrees of felicity.

It cannot be doubted that the *Wisteria Sinensis* was introduced to Japan from China, where it is so much cultivated.

45. Wisteria *brachybotrys,* n. sp,

46. Styrax *obassia,* n. sp.

47. Pterostyrax *corymbosum,* Siebold; a new plant of *Styraceæ.*

48. Lychnis *grandiflora,* Jacq. 49. L. *Senno* (L. Chalcedonica, *Th.*)

50. Cornus *officinalis,* n. sp.

51. Hydrangea *Azisai,* Siebold; very closely allied to H. *hortensis,* L. 52. H. *Otaksa,* n. sp. 53. H. *Japonica,* n. sp. 54. H. *petiolaris* n. sp. 55. H. *Belzonii,* n. sp. 56, 57. H. *acuminata,* n. sp. 58. H. *Thunbergii,* Siebold. 59. 1, H. *stellata,* Siebold. 59. 2, H. *cordifolia,* n. sp. 60. H. *virens,* Siebold. 61. H. *paniculata,* Siebold. 62. H. *hirta,* n. sp. 63, 64. H. *involucrata,* Siebold.

65, 66. Cardiandra *alternifolia,* Siebold; new genus of *Hydrangeæ.*

67. Euscaphis *staphyleoides,* Siebold; new genus of *Staphyleaceæ,* founded upon the *Sambucus Japonica,* Th.

68. Skimmia *Japonica,* Th.

69. Spiræa *Thunbergii,* Siebold S. crenata, *Th.*) 70. S. *prunifolia,* n. sp.

71. Tamarix *Chinensis,* Lour.

72. Eupetelia *polyandra,* Siebold; new genus of *Ulmaceæ.*

73, 74. Hovenia *dulcis,* Th.

75. Daphne *Genkwa,* n. sp.

76. Stauntonia *hexaphylla,* Decaisne.

77. Akebia *quinata,* Decaisne. 78. A. *lobata,* Decaisne.

79. Röttlera *Japonica,* spr.

80. Ternstrœmia *Japonica,* Siebold (Clayera, *Th.*)

81. Clayera *Japonica,* Siebold (C. ochnacea, *α*, *D.C.*)

82. Camellia *Japonica,* L. 83. C. *Sasanqua,* Th.—"The '*Sasank'wa*' is set in the plantations of tea, at a distance of ten or twelve feet between each shrub, with the object of sheltering the tender tea leaves from the east wind in spring, and the burning sun's rays during summer. It is seldom that the leaves themselves are collected for tea, but the country people assert that the delightful scent of its flowers communicates a similar odour and taste to the tea, of which the finer sorts are gathered at the period when the Sasank'wa is in bloom. So universal is the idea that the tender leaves of tea are affected by the smell of neighbouring objects, that the persons employed in raising it carefully avoid the vicinity of manure heaps, and even wear gloves when gathering the imperial tea reserved for the use of the princes and nobles of the realm. An oil is extracted from Sasank'wa nuts, similar to what is produced by the Camellia.

The glossy and tufted foliage, with the beauty of its red or white flowers, the more prized because they blow in winter, cause this shrub to be extensively planted round the dwellings of the rich and wealthy inhabitants of Japan; upwards of twenty varieties are in cultivation.

84. Porophyllum *Japonicum,* D.C.

85. Raphiolepis *Japonica,* n. sp.

86. Helwingia *rusciflora,* Willd.

87. Tetranthera *Japonica,* Th.

88. Hisingera *racemosa,* n. sp.

89. Quercus *glabra*, Th.

90. Prunus *Japonica*, Th.

91. Campanumæa *lanceolata*, Siebold.

92. Hydrangea *bracteata*, Siebold.

93. Hibiscus *Hamabó*, n. sp.

94. Distylium *racemosum*, Siebold; a new genus of *Hamamelideæ.*

95. Staphylea *Bumalda*, DC.

96. Stuartia *monadelpha*, n. sp.

97. Eriobotrya *Japonica*, Lindl.

98. Kerria *Japonica*, DC.

99. Rhodotypos *kerrioides*, Siebold; a new genus of *Rosaceæ.*

100. Is devoted to some supplementary subjects already described in the pages of the 1st Volume, of which this is the concluding plate.

101, 102. Sciadopytis *verticellata*, Siebold (Taxus, *Th.*) a new genus, which together with *Cunninghamia* and *Damarra*, is referred to a new group of *Coniferæ* called "*Cunninghamiaceæ*," having the seeds "libere pendula nec squamæ fructiferæ immersa."

103, 104. Cunninghamia *Sinensis*, Br.

105. Abies *leptolepis*, Siebold. 106. A. *Tsuga*, n. sp. 107. A. *firma*, n. sp. 108. A. *homolepis*, n. sp. 109. A. *bifida*, n. sp. 110. A. *Jezoensis*, n. sp. 111. A. *polita*, Siebold (Pinus Abies. *Th.*)

112. Pinus *densiflora*, n. sp. 113, 114. P. *Massoniana*, Siebold (P. Sylvestris, *Th.*) 115. P. *parviflora*, Siebold (P. *Cembra*, Th.) 116. P. *Koraiensis*, Siebold (P. Strobus, *Th.*)—This, the 3rd Fasciculus of Volume 2, contains likewise a Plate (Tab. 137) with figures of the phyllulæ and pulvini of several species of Abies.

New British Moss.

A new Moss, *Bryum mnioides*, Wils. mst., was found in March, 1844, and in previous years by John Nowell, an intelligent operative of Todworden, the discoverer in Britain of

Cinclidium stygium. It appears to be the same Moss as n. 253 of Drummond's Musci Americani, which Bruch and Schimper propose to call *Mnium pseudo-punctatum* (See Lond. Journ. of Bot. Dec. 1843); but our Moss is essentially a *Bryum* in its mode of producing innovations immediately below the perichætium. It is easily known from *Mnium punctatum* by its celluloso-margined leaves, and small roundish capsule; it differs also in its inflorescence. Specimens have been sent to Mr. Sowerby for figuring in Engl. Botany Suppl.—*W. Wilson.*

New British Phænogamous Plant.

It gives us pleasure to be able to announce, that a small party of Botanists, consisting of Mr. Jas. Backhouse and Son, Mr. John Tatham, Jun., Mr. George Gibson, and Mr. Sylvanus Thompson, have detected in Teesdale the *Spergula stricta*, Sw. (Arenaria uliginosa, *Schleich. and DeCand.*; Alsinantha stricta, *Fenzl. and Reichenbach*). We shall notice this more particularly in a future number.

ALGÆ *of* TASMANIA, *by* W. H. HARVEY, M.D. M.R.I.A. *&c.*

It is my intention to publish in the Journal of Botany, under the above title, descriptions of all Marine Plants which may be communicated from Tasmania, either to Sir W. J. Hooker or to myself. At present, besides the parcel about to be noticed, I have under examination another package communicated by Mr. Gunn to Sir W. J. Hooker in 1840, the description of which, long since commenced, has been unavoidably delayed, but which will shortly appear; and one from Dr. Jennirett, which will form the subject of a succeeding paper. These several parcels are so interesting, and contain so great a number of new species, as to hold out the promise that when the shores of Van Diemen's Land are more fully explored, they will yield a Marine Flora richer in species, and more luxuriant and delicate in form than those of any other country in the world. The FLORIDEÆ (or red-coloured sea-weeds) of these shores are particularly beautiful and curious, especially those of the tribe *Rhodomeleæ*, which there, seems to put on its highest development. We are less acquainted with the FUCOIDEÆ (olive-coloured sea-weeds); and I would beg especially to request the attention of our colonial friends to these; and in doing so, would pray them to gather specimens of the *whole frond*, including the main stem from its base upwards. In general, the specimens of Fucoideæ sent to Europe are so broken, that it is difficult to describe them, if new; or, to refer them to the several described species. This is especially the case with *Sargassa* and *Cystoseiræ*. The species of these genera are known to be very variable in their characters, often producing leaves of different form on different parts of the same frond, a circumstance that renders it particularly difficult, and often mischievous, to make descriptions from any but the most perfect specimens, or a series of such.

Should I be so fortunate as to awaken an interest in this neglected department of Botany among Van Diemen's Land Botanists, and should they place in my hands sufficient materials for an "ALGOLOGIA TASMANICA," it is my wish to undertake such a work in a separate form. It would be written in the English language, with detailed descriptions, and figures to illustrate the genera; and I should especially bear it in mind to make descriptions intelligible to the amateur botanist, whose knowledge of Botany is picked up on a visit to the sea-shore in the summer time.

W. H. H.

Trinity College, Dublin, June 24, 1844.

No. 1.—*Description of* ALGÆ *gathered at George Town, Van Diemen's Land, and communicated to* SIR W. J. HOOKER, *by* RONALD GUNN, ESQ.

SERIES I.—RHODOSPERMEÆ, OR FLORIDEÆ.

TRIBE 1. RHODOMELEÆ, *J. Ag.*

1. Claudea *elegans*, Lam.—George Town, *R. Gunn, Esq.*, n. 1261.—The three specimens of this plant, which the parcel contains, have already been noticed in this Journal, p. 408, Tab. xx.

2. Dictyomenia *tridens*, Grev.; fronde lineari, membranacea, reticulata, bi-tripinnata, costata, costa ante apicem evanescente, pinnis pinnulisque crebris, apicem versus sensim minoribus, erecto-patentibus, margine dentibus tri-multifidis ornatis; axillis dentorum rotundatis; keramidiis globosis, sessilibus; stichidiis . . . .?—Fucus tridens, *Turn. t.* 255.

George Town, V. D. L., *R. Gunn Esq.*, n. 1280.—*Fronds* 6-8 inches long or more, from a line to nearly a quarter of an inch in breadth, flat and membranaceous, linear, tapering to the base and apex, furnished in the lower part with a strong midrib, which gradually becomes thinner and fainter as it approaches the upper part, and nearly or quite disappears below the apex, simple or divided into 3-4 principal stems; stems or main branches bi-tripinnate, with an ovate circumscription; pinnæ closely set, erecto-patent, with rounded axils; pinnules similar; and the margin in every part of the frond save the denuded bases of old stems, furnished with minute, tooth-like, forked, trifid, or 4-6-fid ramuli, about a line in length, occasionally elongating into pinnules. *Colour* dark reddish brown or chesnut. *Capsules* or *Keramidia* nearly globose, wide-mouthed, sessile on the tooth-like, marginal processes.

3. Pollexfenia *pedicellata*, Harv.

POLLEXFENIA, *Nov. Gen.*

Frons plana, membranacea, purpureo-rosea, expansa, enervia, lacero-fissa, reticulata, e cellulis polygonis formata. *Keramidia* ovata, apiculata, poro pertusa, pericarpio crasso carnoso, e frondis paginâ orientia, sessilia v. pedicellata, *granulis* pyriformibus basifixis fœta. *Stichidia* . . . . . . ?— Algæ *Capenses et Australasicæ, habitu* Nitophylli, *structurâ* Dictyomeniæ *affines.*

This genus, founded on a plant from the Cape of Good Hope, is inscribed to the *Rev. John H. Pollexfen* of Bradford an accomplished British Botanist and Algologist, who has explored the marine flora of the Orkneys with much success.

Pollexfenia *pedicellata,* Harv.; fronde latissima dichotome laciniata; segmentis divaricatis, longitudinaliter pellucido-striatis; sinubus rotundatis; apicibus obtusis; keramidiis ovatis, pedicellatis.

George Town, V. D. L., *R. Gunn, Esq.*. 1272 and 1274.— *Frond* 4-5 inches long, and about equally broad, delicately membranaceous, with an orbicular outline, more or less deeply divided in a dichotomous manner; the segments spreading and the spaces between them remarkably wide and rounded; the apices obtuse and broad, and the margin flat and without teeth. The substance is very thin, highly reticulated as in *Nitophyllum,* and destitute of rib or veins, but the frond is traversed through its entire extent with a wide band of pellucid longitudinal filaments, which run through its centre, and give the appearance, under a pocket lens, of pellucid striæ. These filaments originate at the base of the frond, and radiate towards all the segments, passing through the middle portion of each, and evidently supply the place of midrib, though they do not assume its appearance. They are most obvious towards the apices, which is not generally the case with ribs or veins. *Colour* probably a purplish rose red, rather inclining to brownish red in drying. *Keramidia* abundantly scattered over both surfaces of the frond, ovate, acuminate, borne on stalks as long as themselves. *Stichidia* unknown. It adheres to paper.

The Cape of Good Hope species which I have sent to several of my friends either as "*Rytiphlæa?* n. sp.," or "*Nov. Gen.*" may be thus characterised :—

Pollexfenia *laciniata,* Harv.; fronde flabelliformi basi cuneatâ, in segmentis lineari-cuneatis, laciniatis, palmato-multifidis, vel subdichotomis, erecto-patentibus, profunde fissa; margine lacero-dentato; sinubus obtusis; apicibus laceratis; keramidiis sessilibus.

At Muysenberg, False Bay, C. B. S., growing with *Thamnophora corallorhiza* near low water mark, *W. H. Harvey. Fronds* tufted, 6-7 inches high, narrow at the base, becoming gradually wider till they are half an inch broad; then spreading with a fanshaped or broadly ovate outline, and divided in a partly dichotomous, partly pinnate manner, the segments generally half an inch wide, nearly linear, erecto-patent, and again dividing in the same irregular manner. The axils every where rounded, but not very broad. The apices generally jagged; and the margin either toothed, lacero-dentate or almost ciliate at times. *Keramidia* sessile, generally near the margin, few on each frond, depresso-ovate or mamillæform, thick and fleshy. *Stichidia* unknown. *Colour* fine purple-red, with iridescent tints when fresh, becoming darker and duller on drying. It adheres to paper.

4. Dasya *naccarioides,* Harv.; caule crasso, longissimo, indiviso, ramisque nudo, cartilagineo; ramis alternis, pinnatis vel sub-bipinnatis; pinnis clavæformibus, filis verticillatis, dichotomis, articulatis, minimis, densissime vestitis; filorum axillis patentibus, articulis inferioribus subduplo, superioribus quadruplo diametro longioribus; stichidiis oblongis, obtusis, sphærosporas biseriales includentibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1287.—*Stem* 12 inches long or more, 1-2 lines thick, cartilaginous, shrinking in drying, quite naked, undivided, but furnished from base to apex at distances varying from ¼ inch to an inch, with spreading, alternate, undivided branches similar to the stem, but only one fourth of its diameter. These produce a third series of undivided branchlets or pinnæ, which are also about ¼ the diameter of the branches; and in luxuriant specimens another series is probably borne. All the divisions are alternate, and generally a considerable space intervenes between both branches and branchlets. The branches like the stem are naked; the branchlets alone, which diminish in size from the base to the apex of the branches, are furnished with the filamentous articulate *ramelli* characteristic of the genus. These *ramelli* are very minute, scarcely $\frac{1}{4}$ of a line long, horizontally patent, whorled, rising from broad bases or slightly foliaceous expansions, many times dichotomous, with patent axils; their lower part thick, with short joints, the upper gradually attenuated, with long joints. *Stichidia* borne on the ramelli, sessile, oblong, subobtuse or slightly mucronate, containing a double row of 3-parted tetraspores. Colour of the frond pale red, of the ramuli rosy.—The habit of this plant is something like that of *Naccaria Wigghii*, especially in the clubshaped branchlets; but it is a true species of *Dasya*.

5. Dasya *villosa*, Harv.; caule crasso, longissimo, pinnatim decomposito-ramosissimo, vestito, cartilagineo; ramis ramulisque alternis, crebis, erecto-patentibus, totis filis quadri fariis, articulatis, elongatis, floccosis, tenuissimis vestitis; filis dichotomis, axillis acutis, articulis diametro quadruplo longioribus; stichidiis pedicellatis oblongis, acutis v. mucronatis; keramidiis ovatis, acuminatis, pedicellatis, e ramis enatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1262 and 1263. —*Stem* 12-14 inches long, excessively branched and bushy, the lower branches often as long as the stem, many times divided in an alternate, but not distichous manner. Branches crowded; they, and all parts of the frond except the older portions of the stem densely clothed with exceedingly slender quadrifariously inserted, *scattered,* articulated filaments or ramelli. These are neither whorled nor pencilled at their insertion, but, though crowded, are scattered irregularly over the surface, erecto-patent, 2-3 lines long, repeatedly, but rather distantly dichotomous, with joints about 4 times as long as broad. *Colour* a dark vinous red, becoming brownish, and staining the paper in drying. *Keramidia* springing directly from the stem, on thickish inarticulate stalks, ovate-acuminate, large. *Stichidia* borne on the ramelli, pedicellate, oblong, acute or lanceolate, but not remarkably attenuate.—This species has greatly the habit of *D. elegans*, Ag., but is a much coarser growing plant, and wants the beautiful rosy colour of that species.

6. Dasya *bolbochæte*, Harv.; caule crassiusculo, ramosissimo; ramis alternis, patentibus, simplicibus, ramulisque filis articulatis elongatis floccosis tenuissimis vestitis; filis e bulbo lanceolato basi attenuato penicillatis, simplicibus, setiformibus, fragilibus, articulis diametro 5-6-plo longioribus......?

George Town, V. D. L., *R. Gunn, Esq.*, n. 1264.—*Stem* 6-8 inches long, thicker than hog's bristle, much branched from the base; branches alternate or irregular, spreading, once or twice divided; the penultimate branches long and simple, clothed, but not very densely, with articulated ramelli. Ramelli 2-3 lines long, simple, setaceous, and very fragile if moistened after having been dried, springing from bulbous bodies borne quadrifariously on the stem, of a lanceolate figure and not unlike in form to the stichidia of the genus.—The ramelli spring from all parts of these bulbs, from top to bottom, and thus form little pencils. The stem, though externally striate, as in Dasya proper, is internally many tubed as in Polysiphonia, and divided into joints about equal in length and breadth. Colour full red. Fruit unknown.

7. Dasya *verticillata*, Harv.; caule crasso longissimo; ramis alternis, pinnatis, gracilibus, basi attenuatis; pinnis ramellis articulatis elongatis simplicibus striatis verticillatis; verticillis approximatis; articulis diametro 5-8-plo longioribus; stichidiis......?

George Town, V. D. L., *R. Gunn, Esq.*, n. 1306.—A single imperfect specimen of this very distinct species has only been sent by Mr. Gunn. This is a fragment of an undivided stem 5 inches long, cylindrical, and about ½ a line in diameter, bearing seven more or less perfect, alternate patent branches, each about 4 inches long. These branches are much more slender than the main stem, and taper remarkably at their insertion; they are naked in their lower part, but above are distantly pinnate; the pinnæ are alternate, either simple or pinnulated, and regularly and closely whorled with very slender straight simple jointed ramuli, 8-10 times longer than the distances between the whorls, and having cylindrical joints 5-8 times longer than their diameter. Colour rosy red. Substance not very tender, the stem only imperfectly adhering to paper. Externally the stem and branches appear inarticulate, but internally they are many tubed.

8. Dasya *ceramioides*, Harv.; caule crasso, inarticulato, glaberrimo, vagè decomposito-ramoso; ramis pseudo-articulatis, ad articulos sursum incrassatos diametro 4-5-plo longiores pinnatis bipinnatisve; pinnulis ultimis (v. *ramellis*) articulatis, alternis, crassis, simplicibus furcatis v. alterne multifidis, acutis, basi constrictis: articulis diametro 2-3-plo longioribus; stichidiis minimis, lanceolatis, ad apices ramellorum insidentibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1303 *in part.*—*Fronds* 4 inches, or probably much more in length, $\frac{1}{3}$ of a line in diameter at the base, gradually smaller upwards, irregularly divided many times in a pinnate manner, the divisions patent with rounded axils. Branches rather flexuous, opake, and not distinctly jointed, but divided at intervals of 4-5 diameters into portions resembling joints narrowed at their base and swelling upwards, almost pyriform; from the swollen part of which spring lesser branches or pinnules, also inarticulate, but furnished with jointed single tubed ramuli, which are not of much less diameter than the pinnules. These ultimate ramuli are contracted at the basal joint, and gradually taper to an acute apex; they are simple at the lower part of the pinnule, erecto-patent and rather distant; those in the upper part of the pinnule are alternately divided or pinnulated:—the joints in all about 2-3 times longer than broad. The *Stichidia* are exceedingly minute, especially so in reference to the large size of the plant, and are borne on long pedicels or accessory ramuli which spring from the more divided of the jointed ramuli. Each stichidium is of less diameter than the ramulus from which its pedicel springs, and might easily fit into one of its joints. —Of this plant I have seen but a single imperfect specimen, but its characters are so distinct that there can be no doubt of its claim to specific distinction. It is not closely related to any Australian species yet noticed, but is allied in many characters to the European *D. coccinea*, from which the smooth stem, the long joints, and the fruit will readily distinguish it. The colour is a pinky red, given out in fresh water.

9. Polysiphonia *byssoclados*, Harv.; caule ultra-setaceo, elongato sub-dichotomo, articulato, basi nudo; ramis decomposito-ramosissimis, sensim attenuatis; ultimis elongatis, simplicibus; totis ramellis monosiphoniis dichotomis articulatis roseis densissime vestitis; articulis caulinis diametro triplo longioribus, rameis diametro equalibus v. brevioribus; keramidiis ovatis, sessilibus. *Cladostephus australis*, Ag! Syst. p. 169.—*Griffithsia australis*, Ag! spec. 2. p. 135.—*Bindera cladostephus*, Dne! (fide spec. e Cl. Decaisne.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1267.—Stem 6-10 inches long, thicker than hog's bristle in the lower part, and about setaceous in the principal divisions, distinctly articulated in every part, seven tubed; the main branches naked at base, somewhat dichotomous or irregularly multifid, with a fan-shaped outline, their upper part and all the lesser divisions densely clothed with quadrifarious, horizontally patent, single tubed, dichotomous ramelli or filaments, which are about a line in length, and are especially crowded at the tips of the branches, and there form a dark spot or tuft. *Keramidia* ovate, sessile on the branches at the base of the multifid ramelli. Colour red, drying to brown.—This species has to the naked eye so much the character of a *Dasya*, that at first sight, I had referred it to that genus. A closer inspection, however, showed that it could not be generically separated from *Polysiphonia byssoides*, with which species the structure of its stem and of its ramelli precisely agrees. Both species, indeed, form a close link with *Dasya*.

10. Polysiphonia *Gunniana*, Harv.; caule longissimo, crasso, sub-inarticulato, striato, alternè ramosissimo; ramis primariis elongatis, distantibus, cauli similibus, articulatis; secundariis ramulis dichotomè multifidis roseis pinnatis; ramulis flabellatis, multoties dichotomis, sensim attenuatis, et in filis monosiphoniis byssoideis, roseis desinentibus; articulis omnibus diametro sesqui-vel duplo longioribus; keramidiis (magnis) globosis, sessilibus; stichidiis lanceolatis, acuminatis, ad apices ramulorum.

George Town, V. D. L., *Ronald Gunn, Esq.*, n. 1265, 1266. —Stem 8-10 inches long or more, more than half a line in diameter at base, gradually attenuated upwards, repeatedly and at length excessively branched, inarticulate below, more or less evidently so above. Branches resembling the stem, long, as thick as or thicker than hog's bristle, somewhat flexuous, twice or thrice alternately divided; the penultimate branches flabellate (the fans half an inch or more in breadth) regularly circumscribed, many times dichotomous, gradually attenuated; many-tubed below, but less and less compound upwards, and ending in *single-tubed*, coloured, dichotomous filaments, which are exactly similar to those of *Dasya*. Colour a brilliant rosy red or crimson, as in *P. elongata rosea*. Substance tender, but not very gelatinous, adhering to paper. Capsules very large, seated on the dichotomous ramuli, sessile or nearly so, at first ovate, afterwards globose or nearly sphærical; the pericarp thin and membranous. *Stichidia* resembling closely those of *Dasya*, but, in the specimen examined, without spores, situated at the apex of the polysiphonious portion of the ramulus, and terminating it;—they seem therefore as if nestling among the pencilled one tubed filaments which are produced far beyond these true apices.—This is a very noble and most distinctly characterised species, which probably will mark an Australian section of the genus, distinguished by having dichotomous ultimate ramuli terminating in single-tubed filaments. I have great pleasure in inscribing it to its discoverer, Mr. Gunn, to whom the botany of V. D. Land stands so largely indebted.

11. Polysiphonia *Lawrenciana*, Harv.; caule longissimo; crasso, inarticulato, striato, alternè ramosissimo; ramis primariis, secundariis, tertiariisque inarticulatis; tertiariis ramulis dichotome multifidis roseis pinnatis; ramulis congestis, globoso-penicillatis, parum attenuatis multifidis, in filis monosiphoniis dichotomis roseis desinentibus; articulis ramulorum diametro equalibus, filarum sesquilongioribus; stichidiis lanceolatis mucronatis, ad apices ramulorum.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1268.—Stem 8-10 inches long or more, thicker than bristle below, about as thick above, excessively branched in an alternate manner, in all parts opake, veiny, and therefore seemingly striated, without any external indications of joints. Branches of the first, second, and third orders alternate, erecto-patent, rather distant, *all inarticulate;* those of the third order pinnated with dichotomously multifid glomerate or pencilled ramuli, each pencil 1-2 lines in breadth, closely circumscribed and somewhat globular, consisting of a robust main trunk set with four or five distichous once-forked many-tubed ramuli which terminate in a pencil of dichotomously multifid one-tubed attenuated coloured filaments. *Substance* seemingly rigid, and only imperfectly adhering to paper. *Colour* a fine crimson. *Stichidia* lanceolate, terminating the forked ramuli, containing tetraspores.—The strong affinity which exists between this plant and *P. Gunniana* induces me to dedicate it to the memory of the late *R. W. Lawrence, Esq.*, the intimate friend and accomplished fellow-labourer in botany of Mr. Gunn. It differs from *P. Gunniana* in the more rigid substance, inarticulate lesser branches, and small and very dense fascicles of ramuli. To the naked eye it is not very unlike some states of *Ceramium obsoletum.*—A transverse section of the stem shows a large central tube, surrounded by eight or nine others of moderate size, and these externally defended by a wide periphery composed of slender broken cellules containing endochrome, which cause the opake appearance of the stem. In *P. Gunniana* the structure is very similar, except that the periphery is very much narrower, and the tubes proportionally larger.

12. Polysiphonia *frutex,* Harv.; frondibus aggregatis, fruticulosis, ramosissimis, articulatis, sulcatis; caulibus basi ultrasetaceis, sensim attenuatis, et in ramis divaricato-patentibus, decompositis, alternis solutis; ramis secundariis bipinnatis, pinnis distantibus, patentibus; pinnulis brevibus, simplicibus v. ramulosis, apice fibris hyalinis, byssoideis ornatis; articulis omnibus brevissimis, diametro equalibus v. brevioribus, 4 striatis, keramidiis . . . . ?

George Town, V. D. L., *R. Gunn, Esq.,* n. 1317, and one of the specimens marked 1316.—*Fronds* 2-4 inches high, forming globose bushy tufts, branching in every direction from the immediate base, the branches equalling the stem in length, or no distinct stem visible;—all excessively branched, the lesser branches alternate, very patent or divaricate, setaceous below, attenuated upwards, straight, bi-tripinnate, with distant alternate pinnæ; these in their turn having distant, short, spinelike pinnulæ, which are sometimes again pinnellate;—all the apices terminating in colourless byssoid fibres. Colour dull grey or brownish, staining the paper reddish. Articulations visible from the base to the apex, very short. A transverse section of the stem shows a small central siphon surrounded by seven large tubes, without any external cellular periphery; the stem is consequently furrowed.—This has a good deal the habit of the European *P. fruticulosa* (whence the specific name), and several of the characters of *P. subulifera*;—but it is distinct from both.

13. Polysiphonia *fuscescens,* Harv.; frondibus aggregatis, fruticosis, ramosissimis, articulatis, sulcatis, setaceis; e basi

in ramis elongatis erectis divisis; ramis attenuatis bi-tripinnatis; pinnis pinnulisque erecto-patentibus, brevibus, simplicibus v. ramulosis, apice fibris hyalinis byssoideis ornatis; articulis ramorum diametro 2-4-plo longioribus, ramulorum brevissimis, 4 striatis; keramidiis....?

George Town, V. D. L., *R. Gunn, Esq.*, n. 1316 in part.—*Fronds* 6-8 inches high, excessively branched and bushy, but not of so shrub-like a character as *P. frutex,* much divided from near the base into long erect branches or stems, which are generally simple, or merely throw out from their lower part long branches similar to themselves. These branches are in circumscription linear or narrow lanceolate, fasciculato-bipinnate throughout their length, the pinnæ very short, in proportion to the length of the branch, or ¼ to ½ inch long on branches that are 4-5 inches long, erect or erecto-patent, pinnulated with short simple spinelike ramuli, the apices beset with byssoid fibres. Articulations of the stem and branches 4 striate, from 2 to 4 times longer than broad. Colour a dull brownish or grey.—This species, which may be looked on as the V. D. Land representative of *P. nigrescens,* is nearly allied to *P. frutex,* but differs something in habit, and clearly in the length of the joints. The structure of the stem is similar in both.

14. Polysiphonia *cancellata,* Harv.; frondibus ultrasetaceis, fruticulosis, spinoso-ramosissimis, articulatis, sulcatis; ramis e basi emissis, longissimis, flexuosis, divaricatis v. horizontalibus, ramulis alternis, distantibus, patentissimis vix pinnulatis v. margine subuliferis; articulis diametro duplo brevioribus, reticulatis, 4 striatis; keramidiis minutis, ovatis, sessilibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1318 and 1320. —*Fronds* 4-5 inches high, thicker than bristle at the base, forming a thorny bush, the outline of which is broadly ovate or globose; branches as long as the principal stem, and issuing at right angles with it, flexuous, from a quarter to half an inch asunder, furnished with a second series of horizontally patent ramuli each about an inch long. These ramuli are either furnished with a series of distant, short, spinelike pinnules, or they are more or less *bipinnate*, the pinnæ in this latter case resembling the main ramuli in the former; the ultimate pinnules always patent and spinelike. Articulations deeply furrowed, much shorter than broad, 4 striate; the striæ which mark the tubes as evident as those which divide the branch into joints, and thus the frond has a netted appearance.—Keramidia very small, sessile on the ramuli, ovate. The stem is seven-tubed as in the last two species.

15. Polysiphonia *acanthophora*, Harv.; caule longissimo, crasso, indiviso, inarticulato, bi-tripinnato; pinnulis elongatis, tenuibus, alternis, distantibus, ramulis minutis spinulosis bi-tri-multifidis apice fibrilliferis distiche obsessis; ramulis solum articulatis, articulis sesquilongioribus, bistriatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1291, 1297, 1321.—Stem 8-10 inches long or probably more, cartilaginous, from ¼ to ½ a line or even more in diameter at base, gradually attenuated to the thickness of bristle above; pinnated with patent branches much more slender than itself, which gradually diminish in length from the lower part to the top, so that the general outline of the frond is ovate-lanceolate. These branches are usually again once-pinnated, but in large specimens twice-pinnated, with slender patent pinnæ of from ½ an inch to 1½ inches in length:—both stem, branches, pinnæ and pinnulæ perfectly opake and inarticulate. The pinnæ and pinnulæ are distichously set with minute, jointed, spinelike ramuli, which are about ½ a line in length or less, and either simple, bifid, trifid or multifid with alternate divisions, their apices producing colourless byssoid fibres. Fruit unknown. Stem internally with four principal tubes round a minute central one, and a wide cellular fleshy periphery. Colour in the dry state greyish brown, with a stain of red.—This is one of those inarticulate species which will probably be separated from *Polysiphonia*, and perhaps placed in *Alsidium* as at present defined. It bears an outward resemblance to *P. byssoides*, but is of a totally different structure: and it also something resembles *Acanthophora Delilii*, whence the specific name.

Tribe 2. CHONDRIEÆ, *J. Ag.*

16. Bonnemaisonia *elegans*, Ag.; fronde compressâ, membranaceâ, anguste lineari, decomposito-ramosissima; ramis alternis, flabellatis, ramulis setaceo-subulatis distichis alternis utrinque pectinatis; keramidiis solitariis ovatis in jugamento immersis, poro ad axillam directo. Ag. *Sp. Alg. vol. i. p.* 198.

George Town, V. D. Land, *R. Gunn, Esq.*, n. 1299, 1300. —*Frond* 6-12 inches long, excessively and finely branched; the stem and branches compressed, the ultimate divisions perfectly flat and membranaceous. All the branches, through their whole length, and through all the divisions, are bordered with distichous very slender setaceo-subulate ramuli about a line in length, and tapering to an acute point. Frond internally composed, as in *B. asparagoides* of large polygonal cellules which are visible through the smaller ones which form its surface. No trace of midrib or central opacity. Keramidia ovate, immersed in the sinus of the marginal ciliæ, equally convex on either surface of the frond, opening by a pore directed to the axil of the ramulus, and containing a tuft of pearshaped seeds. These keramidia or capsules are usually solitary on each branchlet, and generally but shortly removed from the apex; but occasionally a branch is found with two, one above the other.—This beautiful plant which, as Agardh well remarks, bears so striking a resemblance to the European *B. asparagoides*, that, except by the fruit, it might be difficult to distinguish them, has also many points in common with *Calocladia pulchra*, Grev., and I am disposed to concur with Mr. J. Agardh in uniting *Calocladia* to *Bonnemaisonia*. So great is the resemblance between *Cal. pulchra* and *B. elegans*, that had I not before me an authentic specimen of *Cal. pulchra* communicated by Dr. Greville, and numerous other specimens of that plant found by Dr.

Joseph Hooker at Kerguelen's Land, I should perhaps have fallen into the error of considering these two species identical. *B. elegans* is, however, a much more delicately and finely branched plant; its substance is far more tender, the ciliæ that border its branches are slenderer, and its capsules are removed from the apex of the ramuli. M. Montagne informs me that Greville's *Calocladia pulchra* belongs to the Lamourouxian genus *Delisia,* and he considers it distinct from *D. fimbriata,* Lam.

17. Laurencia? *membranacea,* Harv.; fronde plana, tenui-membranacea (!), lato-lineari, profunde bipinnatifida; pinnis pinnulisque alternis patentibus, inferioribus brevibus dentiformibus, superioribus linearibus elongatis; axillis rotundatis; pinnulis obtusè dentatis; apicibus obtusis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1277.—Having seen but a solitary barren specimen of this remarkable plant, I am unable to give more than a very imperfect description of it, and cannot altogether satisfy myself of the proper genus to which it should be referred. It has so much the colour and outline of very luxuriant specimens of *Laurencia pinnatifida,* that I venture to place it in the same genus, although its substance is as thin and membranous as the frond of *Rhodomenia bifida,* or of *Thamnophora Mertensii.* Had the apices been *acute,* and the colour less purple, I should probably have placed it in *Thamnophora.* The fruit, when discovered, will decide the question. Mr. Gunn's specimen, which is broken at base, and may be only a branch, measures 8 inches in length, and, taking the expansion of its branches, 7 inches across; the breadth of the frond being half an inch in the widest, and more than a quarter in the narrowest place. There is neither midrib nor thickening in the middle, the whole is a thin membrane. The stem is undivided; its lower half furnished with short, closely set, alternate, bluntly toothed pinnæ about half an inch long; its upper half bears long pinnæ 3 inches long, which are again pinnatifid, the pinnules bluntly toothed, and the teeth themselves bluntly cleft at the apex. All the apices and axils are blunt. Colour a pale purplish red, greenish in the lower part, exactly resembling that of *L. pinnatifida.*

18. Laurencia *tenuissima,* Grev. (Fucus tenuissimus, *Turn. t.* 100.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1296, 1319—and part of 1288 (specimens in decay).

19. Laurencia *dasyphylla,* Grev. (Fucus dasyphyllus, *Turn. t.* 22.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1281.—Colour much darker than usual, deep purple.

20. Laurencia *obtusa,* Lamour. (Fucus obtusus, *Turn. t.* 21.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1288, in part.

21. Laurencia *botryoides,* Gaill. (Fucus botryoides, *Turn. t.* 178.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1286.

22. Chylocladia *kaliformis,* Grev. (Fucus kaliformis, *Turn. t.* 29.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1323.

23. Chylocladia *Tasmanica,* Harv., M.S.S.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1295.—Two imperfect and half decomposed specimens of a fine *Chylocladia,* probably new, but too closely allied to *C. articulata* for me to venture to describe it without more perfect specimens. The substance is far more gelatinous than in *C. articulata,* and the size, unless we compare it with the gigantic state figured by Turner, is much greater. The length of the lowermost constrictions is, in one specimen, an inch and in the other 1½ inches. It appears to decompose rapidly in fresh water, throwing off its ultimate ramuli as a Starfish does its rays. The frond is irregularly dichotomous, with very patent axils, constricted at the branching; the upper divisions umbellate, 4-5 new branches springing from the top of an old one, and these from their apices giving birth to saccate clavate ramuli.

Tribe 3. SPHÆROCOCCOIDEÆ, *J. Ag.*

24. Hypnea *musciformis,* γ. *Valentiæ,* Harv. *in Hook. Journ. Bot.* 1, *p.* 153.—Fucus Valentiæ, *Turn. t.* 78.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1314.—This specimen bears sphærospores in the patent ramuli.

25. Gracilaria *lichenoides?* (Fucus lichenoides, *Turn. t.* 118 ?)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1292.—Either *G. lichenoides* or a species very closely resembling it. The specimen produces irregular wartlike nemathecia.

26. Sphærococcus *australis*, Harv.; caule brevi, carnoso, cylindrico, mox cuneato et in fronde lineari, compresso-planâ, membranaceâ, coccineâ, ecostatâ abeunte; fronde decomposito-dichotomâ; segmentis circumscriptione flabelliformibus, ramulis dichotomè multifidis sensim angustioribus distichis patentibus pinnatis; axillis rotundatis obtusissimis; apicibus acutis, laceratis; coccidiis acutis demum tuberculatis ad apices ramulorum sessilibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1279:—also abundantly in the collection of 1840. Root scutate. Stem as thick as a sparrow's quill, cylindrical, cartilaginous, about a quarter of an inch in length, expanding thence, from a cuneate thickened apex, into a frond 4-12 inches long or probably more, which divides in an irregularly dichotomous manner into a few principal segments which preserve a nearly equal breadth of from 1-2 lines (in different specimens), and produce along their margins in a manner sometimes alternately pinnate, sometimes alternately geminate secund, or imperfectly dichotomous, *lesser* distichous *segments* half the breadth of those from which they spring, which either at once divide into dichotomously multifid ramuli gradually narrower, or are themselves pinnated with such multifid ramuli. These *multifid ramuli*, and even the major segments, preserve a tolerably defined flabellate outline.—Such is the common state of the more regular specimens, but others occur which are cleft in a manner so exceedingly irregular, between pinnate and dichotomous, that it is impossible to convey in words any idea of the branching. One character, however, runs through all the varieties, namely: every axil, from the greatest to the least, is remarkably rounded and large; and in the more finely divided or upper part of the frond, the segments overlap each other above the axils, leaving wide circular spaces like holes in a net. The apices are all *acute*; the ultimate ramuli even *subulate*, from which circumstance, added to the colour, the position of the fruit, and the internal structure of the frond, I am induced to place this plant in the *restricted* genus *Sphærococcus* (Grev.) rather than in *Rhodomenia*, although there is no trace of midrib. The internal structure to which I allude consists in a number of large intercellular spaces of a roundish figure that exist throughout the substance of the frond, and give a transverse section of it a honey-combed appearance; while under a pocket lens they impart a netted character to the surface of the frond. These air-cells separate the two opposite surfaces so considerably, that we must call the frond rather very much *compressed*, than truly *flat*. The coccidia are borne only on the ultimate divisions, and generally at or near the apices; at first they are conical, they afterwards become more globose, and finally are tuberculated and very irregular in form. They are of a fleshy substance, and contain a *favella*, or mass of sporules divided into a great number of lesser clusters. The colour is exactly that of *S. coronopifolius*, and the habit is not dissimilar. The substance is thinner, yet it scarcely adheres to paper.—I had at first thought that this plant, which appears to be common in V. D. L., might be *Rhodomenia alcicornis*, J. Ag., but on reading over his description carefully, I cannot suppose them the same. The position of the fruit affords an obvious difference.

Tribe 4. DELESSERIEÆ, *J. Ag.*

27. Nitophyllum *punctatum*, Grev. (Fucus punctatus, *Turn. t.* 71.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1270 (with capsules), and n. 1269, 1271 (with granular fruit).

28. Nitophyllum, *n. sp.* ?

George Town, V. D. L., *R. Gunn, Esq.*, n. 1273 and 1276? —The specimens are without fruit, and therefore I do not venture to found a species upon them in a genus liable to such variations of form. It so closely resembles, in the dichotomous linear frond, bordered with ciliæ, some states of *Rhodomenia bifida,* that I at first regarded it as that species; but the reticulations of the frond are very much larger, and evidently point to a place in *Nitophyllum.*—Mr. Gunn's n. 1282, is also a *Nitophyllum* in a young state, and probably new.

29. Nitophyllum *affine*, Harv.; caule brevi, carnoso, mox in fronde latissimè flabelliformi, laceratâ, enervosâ, membranaceâ, basi subopacâ crassâ expanso; segmentis subpinnatifidis, sinubus rotundatis, soris granularum oblongis in segmentis ultimis longitudinaliter ordinatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1272.—Nearly related to *N. Gmelini,* and strongly resembling the large Irish state of that plant, but differing in the position of the sori. It rises with an evident stem which soon expands into the cuneate dark-coloured base of a flabellate membranous frond, 5 inches long and 7 inches wide, veinless, except for the fused indication of the stem at the base, thin and delicate, but probably crisp in a recent state, and only imperfectly adhering to paper. It is deeply inciso-lacerate or many lobed, the segments coarsely sinuato-dentate or subpinnatifid; the marginal lobes blunt and shallow. Sori minute, oblong or linear, ranged in longitudinal rows across the tips of the segments, or scattered over them;—in our specimen past their prime.

30. Thamnophora *procera*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, 1278 in part.—In this species, and in *T. Mertensii,* Grev. I find an evident fine medial line running through the frond and branching off to each lacinia. The expression "fronde ecostata" is rather too strong.

31. Thamnophora *costata*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, 1278 in part. A fragment only.

32. Thamnophora *angusta*, J. Ag. *in Linnæa XV. p.* 10.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1304.

Tribe 6. CRYPTONEMEÆ, *J. Ag.*

33. Chrysimenia *coccinea*, Harv.; fronde compressâ (?), tubulosâ, coccineâ, circumscriptione pyramidali; caule subindiviso vel furcato; ramis alternis v. vagis, erecto-patentibus, dichotomè pinnatis, multifidis; axillis subacutis; ramulis ultimis erectis, basi vix constrictis, apice acutis; coccidiis...... ? granulis triangule divisis in ramulis ultimis nidulantibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1301.—*Frond* (a single specimen only seen) 4 inches high, tubular, with a few lax threads running through the centre, apparently compressed. Stem as thick as bristle, undivided, or nearly so, beset from near the base to the apex with alternate or spiral multifid erecto-patent branches, the lowest longest, the rest gradually smaller upwards, all of them divided in a manner partly dichotomous, partly pinnate, the branches very erect, and the ultimate ramuli elongate and acute, slightly constricted at base. Colour a fine pinky red. Substance membranous and tender, but not very gelatinous. Granules imbedded in all the ramuli. This plant has much the habit of *Gracilaria*, but not the structure.

34. Halymenia *membranacea*, Harv.; fronde planâ, membranaceâ, pallide rubrâ, lineari, basi cuneatâ, vagè subdichotomo-pinnatim v. palmatim-fissâ; segmentis patentibus, e margine ramenta lanceolata v. furcato-cuneata emittentibus; sphærosporis (triangule divisis) per totam frondem sparsis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1276.—*Fronds* tufted, 3-4 inches high, quite flat and thin, membranaceous, cuneate at base, afterwards preserving nearly a uniform breadth of one to two lines, or in the largest specimen nearly ¼ of an inch, very irregularly divided, more pinnatifid than dichotomous, sometimes with several secund segments, sometimes palmate, or laciniate; the axils rounded, and the segments widely spreading or divaricated. The margin in our specimens emits small ramenta, the youngest of which are linear, then lanceolate, and finally forked or palmatifid; all attenuated at base. Colour a pale dull red. Substance membranous, not in the least gelatinous, and not adhering to paper. *Fruit:* innumerable sphærospores, divided triangularly, scattered over the whole surface of the frond, dark-coloured, solitary, dot-like, immersed in the periphery. The structure of the frond internally exhibits very lax anastomosing central filaments ending outwardly in large cellules. —The aspect of this species is very much that of *Rhodomenia sobolifera*, but the structure is very different.

Tribe 7. CERAMIEÆ, *J. Ag.*

35. Ceramium *rubrum*, Ag. (Conferva rubra, *Eng. Bot. t.* 1166.)

George Town, V. D. L., *R. Gunn, Esq.*, n. 1292 and 1305 (in part).

36. Ceramium *diaphanum*, Roth. (Conferva diaphana, *Eng. Bot. t.* 1742).

George Town, V. D. L., *R. Gunn, Esq.*, n. 1309, 1310, 1311, and 1313.

37. Spyridia *filamentosa*, Harv. *in Br. Fl. 2, p.* 337.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1283, 1312, 1305? (but not 1305).—There are two varieties, to the first of which, distinguished by scattered setæ or ramuli, the above numbers belong. This is identical with the Mediterranean and British Plant.—The second variety, or perhaps species, may be called—*β. verticillata*, n. 1298. It is remarkable for having the setæ regularly whorled round the branches, and much denser than in var. *α*.

38. Spyridia? *pellucida*, Harv.; frondibus e basi communi lata stuposa ortis, tenuibus, pellucidis, monosiphoniis, articulatis, roseis, vagè sub-dichotomè ramosissimis: ramis ad quodque geniculum ramulis brevissimis subulatis oppositis v. verticillatis ornatis; articulis diametro sesqui- v. subduplo longioribus.

George Town V. D. L., *R. Gunn, Esq.*, 1305: also in the collection of 1840.—*Fronds* 5-6 inches long, as thick as those of *Ceramium rubrum*, several growing from the same shaggy base, and often matted together below, much and irregularly divided on a dichotomous type, the lesser branches generally alternate, straight; the apices not hooked in. Every part of the stem is clearly jointed, one-tubed and pellucid, but red-coloured, and all the larger and smaller branches, and the stems to their very base, are furnished at each joint with short, awl-shaped, opposite or cruciate ramuli, which are jointed like the stem, and more than half its diameter. These sufficiently mark the species from any variety of *C. rubrum*, and seem to indicate an affinity with *Spyridia*: but I am not sure that I am right in referring it to this genus, in preference to *Ceramium*, with which the structure of the frond more nearly agrees.

39. Griffithsia *setacea?* Ag.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1290, 1302.—These specimens are not in fruit, and have not been sufficiently displayed to show the ramification; n. 1302, as well as it can be examined, seems identical with the European form; n. 1290 is smaller, more slender, and may be different.

40. Griffithsia *flabelliformis*, Harv.; fronde latissime flabellatâ, petiolatâ, multoties dichotomâ; axillis inferioribus patentissimis, superioribus acutis; articulis inferioribus cylindricis, diametro 4-5 plo longioribus: superioribus ellipticis geniculis maxime contractis; ultimis moniliformibus, attenuatis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1294.—A large species, 6 inches long, by 7 inches wide, twelve or fourteen times dichotomous. The lower axils very patent, the upper equally acute and close. Joints in the patent portion of the frond cylindrical, 4-5 times longer than broad; in the erect or upper portion strongly contracted at the genicula, swollen in their middle, and thrice as long as broad; those of the ultimate divisions, which taper to a very fine point, resolved into a string of elliptical beads. Colour a fine blood red. Substance lubricous, but less gelatinous than in *G. corallina*, to which this species is very closely allied.

41. Wrangelia *plumosa*, Harv.; caule nodoso, articulato, frondem percurrente, tripinnato; pinnis pinnulisque nodoso-articulatis; nodis omnibus ramulis verticillati

tenuissimis brevissimis dichotomis densè vestitis; favellis terminalibus, vix involucratis, densissime ramulis hirtiformibus velatis; articulis ramorum diametro 4-plo longioribus, striatis.

George Town, V. D. L., *R. Gunn, Esq.*, 1285, 1315.—*Fronds* 6 inches long or more; stems robust, nearly half a line in diameter at the base, gradually attenuated upwards, undivided, or breaking near the base into a few principal stems, erect, closely set with alternate branches, which are themselves twice pinnate: the whole frond is therefore thrice divided in a pinnate manner, and luxuriant specimens even still more decompounded. The main stem and branches are all evidently jointed, the joints 3-4 diameters asunder, swollen, or knobby, and each densely clothed with minute, almost fibrilliform, dichotomous and gelatinous ramuli, which in the old parts are sometimes worn down into hairyness. In the young parts, and especially in the pinnules, which they entirely invest, they are lengthened, though never exceeding half a line, and much divided dichotomously. The *sphærospores* (or *capsules*) are large, dark red, and abundantly scattered among these ramuli. The *favellæ* are borne on the tips of the branches; they are sphærical and densely tomentose;—but the specimen which produces them is very much battered, which is perhaps the cause of the seeming absence of involucre. Colour dark grey, fading in fresh water, and slightly staining paper pink. Substance tender and gelatinous.

42. Callithamnion? *comosum*, Harv.; caule elongato, tenui, crinito, frondem percurrente, ramosissimo; ramis sensim attenuatis multoties pinnatis, oppositis vel sæpissime abortu alternis vel secundis (ramo abortivo ad ramulum minutum mutato), nodoso-articulatis, nodis filis minutis verticillatis hirtis; pinnulis penultimis cæteris similibus, ab quoque nodo duos ramulos oppositos emittentibus; ramulis byssoideis, tenuissimis, alterne v. secunde divisis, apicibus elongatis, erectis; sphærosporis pedicellatis, ovalibus.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1307, and 1303 in part.—Frond 6-8 inches high, setaceous below, excessively branched in a regularly pinnate manner, each successive pinnation being more slender than the last, till at the fifth or sixth the diameter is reduced to that byssoid fineness that requires a strong magnifying power to see it clearly. The *scheme* of branching is obviously by *opposite* patent branches or pinnæ, repeated over and over again; but from some cause it happens that in by far the greater number of cases in the earlier development of the frond, *one* of these branches is either very much shorter than the other, or is reduced to a mere rudiment, or even altogether wanting; though its place is usually found occupied by a small ramulus. The main branches, and their divisions therefore are frequently alternate. The structure of the stem is peculiar, and something at variance with the genus, while it shows a transition to *Crouania* or *Dudresnaia.* It is composed of a bundle of fine longitudinal threads, glued together, and as if knotted or more firmly combined together at each joint or node from which the branches issue. In old parts it is wholly covered with short hair-like ramelli, but in younger parts these are confined to the nodes, which are 2 or 3 diameters apart from each other. This nodose structure is found in all the divisions till we come to the last where the frond is reduced to a byssoid fineness and a single tube. The last or extreme nodose-pinnules, besides the hair-like ramelli that clothe the nodes, throw out at each node a pair of opposite slender byssoid pinnulated ramuli, whose pinnules are either alternate or secund, erecto-patent, and bear along their upper face, from joint to joint, a row of pedicels, each of which supports a sphærospore. Joints of the ramuli 4 times longer than broad. Colour a fine rosy red, not soon changing in fresh water, and well preserved in drying. Substance very tender and lubricous.—A noble species, and not likely to be confounded with any other.

43. Callithamnion *latissimum*, Harv.; caule elongato, frondem percurrente, tenui, basi opaco, subsetoso, e fibris constituto, in parte superiore articulato glabro; fronde latissimâ, pluries pinnatâ, divisionibus omnibus alternis; ramis pri-

mariis tripinnatis, articulatis, pellucidis, glabris; pinnis similibus sed tenuioribus; pinnulis penultimis (vel *plumulis*) patentibus, tenuibus, flexuosis, simpliciter pinnatis; articulis diametro 3-4-plo longioribus; sphærosporis minutissimis, sphæricis, brevè pedicellatis basin versus pinnellarum ultimarum secundis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1308.—Stem 5-6 inches long, or more, setaceous below, gradually attenuated upwards, continued throughout the broadly ovate, excessively pinnated frond, opake and subsetose below, pellucid and naked above: all the divisions alternate. Main branches very patent or horizontal, 2-3 inches long, about half the diameter of the stem, pellucid and jointed; the joints 4-5 times longer than broad, triply pinnate, the pinnæ resembling the main rachis. Pinnules and their divisions very slender and patent, filiform, blunt. Colour a fine rose red, without any gloss when dry. Substance membranaceous, not very gelatinous. Sphærospores exceedingly minute, secund along the ultimate ramuli near their bases, 4-5 on each ramulus, sphærical, on short stalks.

44. Callithamnion *cruciatum*, Ag.

George Town, V. D. L., *R. Gunn, Esq.*—These specimens do not materially differ from the more slender British states of this variable, but easily recognised species, and are equally distinguished by the darkened tips of the branches, caused by the crowding of the ramuli about them.

SERIES II. MELANOSPERMEÆ OR FUCOIDEÆ.

Tribe 8. SPOROCHNOIDEÆ, *Grev.*

45. Sporochnus *radiciformis*, Ag. (Fucus radiciformis, *Turn. t.* 189.)

George Town, V. D. L., *R. Gunn, Esq.*, 1284, 1293.

Tribe 9. DICTYOTEÆ, *Grev.*

46. Stilophora *australis*, Harv.; fronde cartilaginea, filiformi, alterne bi-tripinnatim ramosa; ramis primariis elongatis, indivisis; secundariis tertiariisque laxe insertis, simplicissimis, strictis, acutis, basi attenuatis; verrucis ellipticis, sparsis.

George Town, V. D. L., *R. Gunn, Esq.*, n. 1318?—A single imperfect specimen marked with a query is all that I have seen (n. 1318 is *Pol. cancellata*), but this is sufficient to establish a perfectly distinct new species. This specimen; which consists of the upper portion of a frond, is 6 inches long, and half a line in diameter, solid, cartilaginous, with a percurrent stem, much branched alternately; the branches and their divisions not strictly distichous, though nearly so. Branches long, simple, patent, alternate or secund, laxly set with alternate elongated simple ramuli, which bear a third and probably occasionally a fourth series similar to themselves. All the ramuli more or less tapering at base, and very acute, or acuminate at the apices. Warts of fructification rather laxly scattered over the branches and ramuli, depressed, exactly elliptical. Colour olive green.

SERIES III.—CHLOROSPERMEÆ OR ZOOSPERMEÆ.

Tribe 10. ULVACEÆ, *Ag.*

47. Ulva *latissima*, L.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1275.
48. Enteromorpha *compressa*, Grev.
George Town, V. D. L., *R. Gunn, Esq.*, n. 1289.

HEPATICÆ ANTARCTICÆ; *being characters and brief descriptions of the* HEPATICÆ *discovered in the southern circumpolar regions during the Voyage of H.M. Discovery Ships Erebus and Terror; by* DR. J. D. HOOKER, *and* DR. THOMAS TAYLOR.

(*Continued from page* 400.)

II.—SPECIES OF THE FALKLAND ISLANDS, CAPE HORN AND OF KERGUELEN'S LAND.

(Where a species occurs, which has before been described among the plants of Campbell's Island and of Lord Auckland's group, it has not been thought necessary to repeat the descriptions.)

(Gymnomitrion, *Nees.*)

1. *J. physocaula,* n. sp.; caule disperso erecto filiformi ramoso celluloso-tumente, ramis apice incrassatis, foliis imbricatis distichis erectis ovatis bipartitis segmentis lanceolatis, integerrimis.

Hab. On *Jung. densifolia,* Hook., Hermite Island, Cape Horn.

Stems nearly two inches long, very slender; shoots pale olive-green, sometimes reddish-brown, bending. Leaves closely imbricated and adpressed to the stem, tumid, hence the shoots to the naked eye resemble those of certain *Pterogonia;* with two, three or four erect branches issuing often from the same point, the tegument of the stem has large whitish cellules. Leaves with entire segments, which have an irregular outline. No stipules present. This species has an affinity to *Jung. concinnata,* (Lightf.) It is, however, by no means tufted, the shoots are more slender and flexible, the leaves have lanceolate segments and the stems are cellulose in a peculiar manner.

(Gottschea, *Nees.*)

2. *J. lamellata, Hooker. Musci Exot. t.* 49.

Hab. Hermite Island, Cape Horn.

3. *J. splachnophylla,* n. sp.; caule subdisperso procumbente subsimplici squamoso, foliis imbricatis erecto-patentibus, lobo ventrali oblongo-ovato, dorsali semi-ovato subæquali, utroque carnoso, apice serrulato, margine incurvo, ala lineari integerrima.

Hab. Cape Horn and Straits of Magalhaen, *Mr. Menzies.*

Shoots two inches long, nearly one fourth of an inch wide, of a sordid whitish-olive colour. Leaves thick, carnose, easily broken at the margins, the two lobes set at an acute angle within which the back of the next upper leaf is received. Beneath, the stem is furnished with roots matted together, among which appear a few scattered subrotund scales, jagged at their summits. The margins of both lobes, as well as of the wing beneath, are slightly incurved.

This species differs remarkably from the rest of the *Gottscheæ* of Nees, by its carnose structure.

4. *J. pachyla*, n. sp.; caule cæspitoso erecto subramoso apice incurvo; foliis imbricatis erecto-patentibus lobis ovato-oblongis acuminatis, dorsali apice incurvo integerrimo, ventrali horizontali margine anteriore dentato apice subincurvo, stipulis majoribus ovato-acuminatis bifidis, segmentis lanceolatis.

Hab. On exposed moist banks, Hermite Island, Cape Horn.

Roots, as in all this tribe, simple, thick, purple. Tufts loose, reddish dark-brown. Stems two inches high, erect. Shoots thick, slightly incurved at their tops. Leaves closely imbricated, their lobes joining by about one fourth of their length, placed at an acute angle one on the other and in the angle receiving the duplicature of the leaf next above; their margins are uneven and the anterior part of the lower has three or four large teeth with a deep sinus between them. The stipules often have their segments unequal, entire but with an uneven outline.

This species is more nearly related to the preceding than to any other *Gottschea* of Nees: it is distinguished by its smaller size, its shorter leaves, their lobes with a shorter commissure, its stems less compressed and by having the margin of the lower lobe dentate.

5. *J. laminigera*, n. sp.; caule cæspitoso erecto ramoso compresso, foliis imbricatis patentibus ciliatis, lobo ventrali lanceolato basi bilobo, dorsali semicordato, utroque cristas dentatas lineares undulatas ferente, ut et stipulis majoribus rotundatis quadrifidis ciliatis, calyce terminali oblongo compresso, cristas dentatas undulatas ferente, ore laciniato ciliato.

Hab. Hermite Island, Cape Horn.

Tufts loose, very pale tawny-green above, brownish beneath. Stems three inches high, the branches erect, fastigiate. The leaves bear toothed and waved crests that frequently terminate at either end without reaching the margins.

Stipules large, their segments with recurved margins, they bear crests at their bases. The calyx likewise bearing crests, is paler than the leaves, Pedicel about one inch long. Capsule cylindrical.

This resembles *Jung. lamellata* Hook., the crests on the leaves, however, are more regular, and the stipules simply bifid. A variety of the present plant, collected in the same locality, is diminutive, its stems not exceeding one inch in height.

(Plagiochila, *Nees et Mont.*)

6. *J. ansata*, n. sp.; caule subcæspitoso adscendente elongato subramoso, foliis imbricatis erectis adpressis secundis rotundatis hinc basi decurrentibus integerrimis.

HAB. Falkland Islands.

Tufts loose, dusky pale-brown. Stems ascending through tufts of *Musci*, in the instance before us of *Dicranum Billardieri* (Schwaeg.), flexuose, weak, scarcely branched. Leaves thin, entire, circular, but the posterior margin terminating in a decurrent process, resembling a handle, whence the trivial name, the leaves are erect and the two series adpressed, hence they are necessarily homomallous; their anterior margin is slightly recurved.

This has the habit of *Jung. conjugata* Hook., but the stems are far more elongated, the leaves quite entire and by no means united in opposite pairs at their bases.

7. *J. unciformis*, n. sp.; caule cæspitoso erecto subsimplici apice uncinato, foliis imbricatis erectis secundis adpressis ovato-rotundatis, margine inferiori gibbosis, denticulatis, superiori incurvis basi subnervosis.

HAB. Hermite Island, Cape Horn.

Tufts a few inches wide, reddish-brown. Stems half an inch high, hooked at the tops. Leaves increasing in size towards the top, homomallous, compressed, much imbricated, their upper margin incurved with a tumid fold, the lower bulging out and denticulate; the cells are minute and condensed, except at the middle of the base where they are large and reddish-brown and so assume the appearance of a short wide nerve.

The present is related to *Jung. biserialis, L. et L.* from Van Diemen's Land. It is, however, not above one fourth the size, has more minute denticulations to the leaves, which are widely ovate, not round and decurrent at the anterior margin, besides the stems are not strikingly flexuose as in that species.

8. *J. duricaulis*, n. sp.; caule laxe cæspitoso erecto ramoso, foliis subimbricatis patentibus semicordatis subdecurrentibus basi postica ventricosa, margine inferiori recurvo utroque denticulato.

Hab. Common in woods, Hermite Island, Cape Horn.

In loose tufts, of a pale but dusky olive-green. Stems four inches high, irregularly branched; shoots when moist subcompressed. Leaves but little imbricated, the ventricose portions of the opposite pairs meet behind and form a crest; the inferior margin is recurved with a round fold, the superior is rather incurved behind the stem; all round, the leaves are minutely denticulate, the leaves are one eighth of an inch long. The perigonium is a short terminal spike.

This approaches very near to *Plagiochila flaccida* (Lind.) from St. Vincent's which has almost an equally hard and ligneous stem, but may be known by the greater breadth of the branches and leaves, by its more compound ramification and by the more minute denticulations of the leaves.

9. *J. sphalera*, n. sp.; caule cæspitoso erecto apice incurvo basi ramoso, foliis subimbricatis erecto-patentibus siccitate secundis madore subdistichis ex angusta basi obovato-rotundatis, margine superiori incurvo integerrimo, inferiori planiusculo dentato.

Hab. Cape Horn.

Tufts rather loose, of a diluted olive-green. Stems two inches high, dividing often at the base, into two or three branches; the tops round, flattened and curved. Leaves, when moistened, although still somewhat secund, yet spreading from the stem, somewhat recurved at their tops, loosely imbricated; their bases are remarkably small, the denticulation of the inferior margin considerable.

This is exceedingly near in characters to our *Jung. unciformis*, but is a taller plant, the leaves less imbricated and less secund. When moistened, their bases are much narrower and the stems are far paler.

10. *J. uncialis*, n. sp.; caule cæspitoso erecto ramoso, foliis subimbricatis erecto-patentibus concavis late ovalibus, margine inferiori subrecurvo dentato, superiori integerrimo, calyce terminali late obovato subtruncato, ore dentato ciliato.

HAB. Cape Horn.

Tufts wide, pale yellowish-green. Stems scarcely one inch high, the fruit-bearing shoots subfastigiate. Leaves by no means decurrent, the perichætial half as long as the calyx. This is roundly truncate, compressed above before flowering, and has a more extended slit on one side. Capsule oblongo-sphærical, scarcely exserted. Perigonia are short spikes occurring in the course of the shoots.

In habit the present approaches the African *Plagiochila sarmentosa* of Lindenberg, but in character is nearer to our *J. aculeata*. The former has larger and more rotund leaves; its fructification is unknown, the latter is a much larger plant, its leaves have a narrower base and their superior margin recurved with a larger fold, their denticulation is coarser, their calyx shorter, scarcely exceeding the top of the perichætial leaves and above all, although our plant is far smaller, the cellules of the leaves are considerably larger.

11. *J. minutula*, n. sp.; caule brevissimo cæspitoso erecto ramoso, foliis arcte imbricatis erectis compressis rotundatis concaviusculis, margine anteriore decurrente, supremis majoribus denticulatis.

HAB. Kerguelen's Island.

Tufts wide, blackish green. Stems erect, rather thick; shoots scarcely one tenth of an inch high, having from four to six pairs of leaves. Lower leaves minute, scarcely wider than the stem, the upper crowded and compressed into a head three or four times wider than the inferior part of the shoot; the lower leaves are nearly entire, the upper crenulato-dentate with very minute teeth; the structure of the leaves is thick and dense, the cells of the margin conspicuous, of the rest indistinct.

This is more minute than the *Plagiochila pusilla* (Mont.), has not its curved stems, the number of leaves is much fewer on each shoot, and it is decidedly distinguished by the anterior margin of the leaves being decurrent.

12. *J. heterodonta*, n. sp.; caule cæspitoso erecto ramoso, ramis erectis subfasciculatis, foliis erecto-patentibus imbricatis obovatis, margine superiori decurrente, inferiori apice emarginato-bidentato, cæterum inæqualiter denticulato, calyce terminali foliis perichætialibus minore ovali-rotundato dentato-ciliato.

HAB. Kerguelen's Island.

Tufts wide, dusky olive-green. Stems nearly two inches high, irregularly branched. Leaves rather closely imbricated, obovate-rotundate or very wide at the tops, their denticulations unequal; in some leaves the emargination into two lobes is sufficiently evident and in all there is some trace of it. Calyx shorter than the perichætium, with a rounded, bilabiate, minutely ciliated top.

From *Plagiochila sciophila* (Lind.), of Nepal, which, likewise, has emarginato-dentate leaves, the present may be known by its smaller size, its erect growth, its leaves closely imbricated and their margins supplied with more teeth; besides perigonia are observed in the antarctic species, and are short, terminal, narrow spikes, with minute, erect, imbricated bidentate leaves, whose tops are somewhat squarrose.

(Jungermannia, *L. et Auct.*)

13. *J. colorata*, Lehm. in Linnæa IV. p. 366.

HAB. Falkland Islands, Cape Horn and Kerguelen's Island.

14. *J. byssacea*, Roth., Cat. Bot. II. p. 158.

HAB. Falkland Islands.

15. J. *bicuspidata*, L. Sp. Pl. II. p. 1589.

Hab. Falkland Islands.

16. *J. rigens*, n. sp.; caule cæspitoso erecto subramoso, foliis imbricatis secundis concavis ovatis bifidis, segmentis incurvis lanceolatis integerrimis, stipulis ovatis bifidis, segmentis subulatis incurvis integerrimis.

Hab. Falkland Islands.

Tufts minute, pale yellowish-olive. Stems scarcely two lines long, nearly simple. Leaves diminishing in size towards the top of the stem, imbricated and their tops incurved so as to give to the shoot a moniliform appearance. Stipules large in proportion to the size of the plant, split down nearly to the base.

This species is analogous to the European *Jung. Francisci* Hook., but is more minute, has leaves more concave, with a deeper sinus and has stipules with subulate and elongated incurved segments.

17. *J. vasculosa*, n. sp.; caule cæspitoso procumbente subramoso, foliis imbricatis erectis secundis tenuibus ex lata decurrente basi rotundato-quadratis, margine integerrimo subsinuoso, stipulis majoribus concavis ovatis bifidis, segmentis lanceolatis integerrimis.

Hab. Falkland Islands.

Patches several inches wide, blackish-green. Stems two inches long, sparingly branched. Leaves rather loosely imbricated, their margins often inflexed, anteriorly somewhat gibbous, posteriorly decurrent, entire yet with an irregular outline; the leaves are very thin and their cells large. The stipules are very conspicuous, embrace the stem and have two broadly lanceolate segments.

It is difficult to say if the present should be arranged among the *Lophocoleæ* or the *Jungermanniæ* proper of Nees. The leaves are too entire for the former tribe. The present species has the air of *Jung. cordifolia* Hook., from which the presence of its conspicuous stipules at once distinguishes it.

18. *J. erinacea*, n. sp.; caule cæspitoso erecto ramoso, ramis erecto-patentibus, foliis imbricatis patentibus, lobo inferiori oblongo, superiori vix connato ovato adpresso, utroque ciliato, apice obtuso minute emarginato, stipulis majoribus rotundatis apice emarginato-bifidis ciliatis.

HAB. Falkland Islands.

Tufts loose, wide, pale olive-green. Stems two inches high, much branched, branches subfastigiate. Leaves scarcely imbricated, yet the margin of one a little overlapping the margin of the next anterior; they are bifid at the top with a shallow round sinus; their ciliæ are large at the base but terminating in a series of simple cells at their tops where they consequently appear articulated. Their structure is widely cellular and their substance very thin. Stipules rotund, ciliated all round, distinctly bifid.

The present is allied to our *Jung. diplophylla* from Lord Auckland's group; the fructification of both is unknown; together they seem to form as natural a genus as any lately proposed, they coincide with *Scapania* of Nees, but have the singularity of being furnished with conspicuous stipules. From *Jung. diplophylla* the present is readily distinguished by the short connexion, if any, between the upper and lower lobes of the leaves, by their emarginate tops, by the more considerable and frequent ciliation of their margins and by the stipule being more rounded and less deeply divided.

19. *J. humectata*, n. sp.; caule laxè cæspitoso erecto ramoso, foliis subapproximatis tenuibus erecto-patentibus basi amplexantibus ovato-rotundatis emarginatis, segmentis obtusiusculis subdivaricatis integerrimis.

HAB. Falkland Islands.

Tufts loose, wide, blackish-brown below, pale dusky olive-green above, branches few, erect. Leaves alternate, rather distant, clasping the stem at their bases, very widely oblong, bifid with an obtuse sinus reaching down for one third of the length of the leaf.

In its apparently wet place of growth, erect posture, and general shape of the leaf, this agrees with the British *Jung. Lyoni*, Tayl., differing, however, by the paler green colour of the young shoots, by the thinner leaves, by their minuter cells, their bases clasping the stems and by their deeper emargination.

20. *J. tubulata*, n. sp.; caule laxè cæspitoso procumbente subramoso, foliis laxis erectiusculis oblongis bifidis segmentis acutis apiculatis, calyce terminali ex angusta elongata tubulata basi oblongo, ore plicato minutissime dentato, foliorum perichætialium segmentis lanceolatis integerrimis.
Hab. Falkland Islands.

Stems in loose pale-green tufts, scarcely half an inch long, nearly simple, bearing, as in *J. bicuspidata* (L.), some flagelliform naked shoots. Leaves whitish-green, pellucid, erect, embracing the stems, concave at their bases, divided by an acute sinus into two lanceolate segments, each terminated by a minute apiculus. Calyces white conspicuous tubes, with swollen tops, where they are wrinkled, and at the mouth most minutely toothed. Perichætial leaves erect, their segments narrow and quite entire. Capsule oblong. Seeds numerous, yellowish-brown, subangulate. Elateres with a double helix.

This greatly resembles the European *J. bicuspidata* (L.); from which it may be certainly distinguished by the shorter capsules, the entire perichætial leaves, the more elongated calyces, and minuter cells of the leaves. The calyces are always terminal, which likewise sometimes happens in *J. bicuspidata* L.

21. *J. cavispina*, n. sp.; caule laxè cæspitoso erecto subramoso, surculis incrassatis, foliis imbricatis erectis adpressis rotundatis integerrimis, margine subrecurvis, stipulis majoribus rotundato-oblongis concavis integerrimis.
Hab. Falkland Islands.

In loose tufts, in watery places, brownish-black. Stems two inches high, sparingly branched, the branches erect.

Leaves, when dry, much recurved, when moistened standing erect and adpressed, but still with their margins somewhat recurved; this structure, however, is most remarkable in the imbricated stipules, which, becoming a concave series, give to the back of the shoot an appearance of having been scooped out.

There is no European or Antarctic *Jungermannia* to which we can compare the present.

22. *J. palustris*, n. sp.; caule disperso erecto elongato ramoso, foliis subimbricatis patentibus tenuissimis scariosis rotundatis concavissimis, margine incurvis, medio plica longitudinali obtusa notatis integerrimis, stipulis ovalibus convexis integerrimis majoribus.

HAB. In watery places; Cape Horn.

Stems ascending up among other *Jungermanniæ*, growing in water, scattered, about three inches high, the branches erect. Leaves tumid, variously bent at the margins, sometimes recurved, but more commonly incurved, having a remarkable longitudinal obtuse fold in the middle. Stipules almost imbricated, very convex.

The leaves of our plant have more resemblance to those of *Hypnum cochlearifolium* (Schwaeg.) than to those of any known *Jungermannia*.

23. *J. fulvella*, n. sp.; caule implexo procumbente ramoso, foliis imbricatis erectis concavis, caulinis obovato-rotundatis, margine subdentatis incurvis ramosis minoribus rotundatis arctiùs imbricatis dentatis, stipulis rotundis concavis subintegerrimis.

HAB. Hermite Island, Cape Horn.

Patches more than three inches wide, pale tawny. Stems about one inch long, repeatedly and irregularly branched, the shoots slender. The stem-leaves are more loosely imbricated and have a wider base, with their margin more incurved and the denticulation more irregular than occurs on the branches. So, likewise, the stipules on the stems are larger, more oblong and more frequently notched. There are no flagelliform shoots, and from the irregular number of the minute teeth of the leaves, this species can scarcely be referred to *Herpetium* of Nees.

24. *J. madida*, n. sp.; caule cæspitoso erecto-ramoso, ramis erectis fastigiatis, foliis laxè imbricatis patentibus amplexicaulibus concavis ovato-rotundatis bifidis, segmentis acutis incurvis subintegerrimis, stipulis majoribus latè ovatis bifidis subintegerrimis, calyce cylindraceo subincurvo apice dentato.

HAB. Hermite Island, Cape Horn.

Tufts loose, several inches wide, dull green when growing in water, rufescent in dry situations. Stems 2 inches high. Leaves scarcely imbricated, bifid for one-third of their length, a few of them exhibiting one or at most two minute teeth on the posterior margin; their structure is minutely cellular. The stipules are nearly as large as the leaves, round, bifid, the segments subdentate. Calyx long, rather acuminated. Capsule cylindrical.

This species is larger and greener when growing in water, the leaves are more entire in dry situations. It is closely allied to *J. serrulata* (Swartz), differing by the less imbricated leaves, whose cells are much more minute, by the few serratures of the margins of the leaves, by the stipules and leaves being shorter, and by the more elongated calyx.

25. *J. æquata*, n. sp.; caule implexo procumbente subramoso flexuoso, foliis imbricatis erectis oppositis rotundatis, margine incurvis integerrimis, basi connatis, stipulâ ovatâ bifidâ conjunctis.

HAB. Hermite Island, Cape Horn.

Patches small, growing among mosses, reddish-brown. Stems about one inch long, variously but sparingly branched, bent back. Leaves closely imbricated, oblongo-rotundate, somewhat convex and tumid when moist from their margins becoming incurved; they are exactly opposite, being slightly connected in front at the base, but joined together behind by the intervention of the stipule, which is ovate and bifid with two subulato-setaceous short segments.

This species reminds one, in the figure of its leaves and their connexion in front, of *Jung. Brankiana* Nees; this however is destitute of stipules.

26. *J. otiphylla*, n. sp.; caule aggregato elongato erecto subramoso debili, foliis imbricatis flaccidis tenuissimis erecto-patentibus elongato-reniformibus margine recurvis integerrimis, stipulis majoribus concavis rotundatis emarginatis.

HAB. Alpine bogs, Hermite Island, Cape Horn.

Tufts loose, dusky whitish-olive. Stems 3 inches high, sparingly branched, the branches erect. Leaves very thin and flaccid, easily retaining any position in water in which they may have been placed, oblong, but before joining the stem above and below rounded like the human ear. Stipules large, subimbricated, their margins incurved, their tops emarginate with a very obtuse and shallow notch.

The present approaches our *J. palustris* from the same country, and from similar situations; but the leaves have not the inflated structure and folds, nor the entire stipules of that species, besides the foliage is more closely imbricated, and more colourless and transparent.

27. *J. austrigena*, n. sp.; caule laxè cæspitoso elongato adscendente ramoso, surculis incurvis, foliis imbricatis erecto-patentibus subsecundis rotundatis convexis integerrimis, stipulis majoribus rotundatis apice bidenticulatis, calyce terminali oblongo compresso trigono, ore subintegro.

HAB. On moist banks, Hermite Island, Cape Horn.

Patches loose and wide, whitish and yellowish-green. Stems 3 inches long, variously branched and flexuose. Leaves closely imbricated, slightly decurrent in front. Stipules round, entire, except at the very summit, where usually two very minute teeth appear under the lens. Calyx large, oblong, wide, variously twisted, having three sides, of which the inferior is the widest, while the two upper meet at a ridged angle.

This species, unlike any other hitherto described, has the calyx of a *Lophocolea* (Nees), from which tribe it is removed by its entire leaves and stipules.

28. *J. chloroleuca*, n. sp.; caule laxè cæspitoso erecto subramoso, foliis subapproximatis erecto-patentibus ex tumidâ amplexante basi ovatis bipartitis, segmentis ligulatis, summo apice bifidis, ciliatis.

HAB. Hermite Island, Cape Horn.

Tufts loose, greenish-white. Leaves distichous, scarcely imbricated, their segments frequently recurved, hence the shoots appear somewhat squarrose, especially in the dry state; the upper parts of the shoots are pale green, the lower with a brown hue. At the tops of the stems there is often a cluster of three or four short branches.

Between this species, *J. densifolia* Hook., and our *J. vertebralis*, there exists the closest analogy, so that they appear to belong to a distinct section of the *Jungermanniæ*. It is chiefly necessary to distinguish the present species from *J. densifolia* (Hook.) by the very different pale green colour, by the denser structure of the leaves, which by no means exhibit distinctly limited cells, by the greater length of the ciliation of the margin of the leaves, their more distant position and the minutely bifid tops of their segments.

29. *J. crebrifolia*, n. sp.; caule cæspitoso erecto ramoso, surculis erectiusculis, foliis imbricatis erectis secundis concavis ovato-rotundatis bilobis, lobis ovatis obtusis integerrimis inferiori minori basi laciniato, calyce laterali obovato plicato, ore scarioso laciniato, laciniis lanceolatis.

HAB. Cape Horn.

Tufts thick, reddish-brown. Stems nearly two inches long, brittle when dry, irregularly but repeatedly branched; branches becoming a little wider towards the tops. Leaves closely imbricated, remaining erect when moistened, their upper lobe the larger, the lower at the base often crossing the stem, and having there a very minute lobe or large lanceolate tooth. Calyces minute, scarcely observable and looking like slight projections on the sides of the stems; they have whitish scariose mouths.

This is closely allied to *Jung. cryptodon* (Wilson's MSS.), which was collected by Mathews at Pilzhum on the Andes of Columbia; like it, ours has a concealed minute lobe at the termination, in front, of the amplexicaul base of the leaf. It appears, however, sufficiently different by its greater size, more imbricated and erecter leaves, with their lower lobes smaller; besides, the accessory lobe, in front, is far more considerable in our plant.

30. *J. humilis*, n. sp.; caule implexo procumbente ramoso, foliis subimbricatis erecto-patentibus subsecundis rotundatis concavis integerrimis, stipulis minutis rotundato-ovatis bifidis segmentis extus subunidentatis.

Hab. Kerguelen's Island.

Patches wide, olive-green. Stems about one inch long, irregularly branched. Leaves loosely imbricated, by no means decurrent, patent and homomallous. Stipules about the breadth of the stems, with a shallow notch, each segment bearing exteriorly a minute tooth.

This is allied to our *J. turgescens*, from Lord Auckland's group; it may be known by its smaller size, more olive colour, by its stipules toothed at each side, by its more patent leaves without decurrent bases, and by their structure of far larger cells.

31. *J. minuta*, Crantz.

Hab. Kerguelen's Island.

(Gymnanthe, *Tayl.*)

32. *J. Urvilleana.* Plagiochila (Scapania) Urvilleana, *Montagne in Voy. au Pole Sud. t.* 16, *f.* 2.

Hab. Cape Horn.

(Lophocolea, *Nees v. Esenbeck*).

33. *J. textilis*, (n. sp.); caule implexo procumbente vagè atque parcè ramoso, foliis distichis complanatis approximatis erecto-patentibus late semiovatis apice sinuato-bispinosis integerrimis planis, cellulis majoribus, stipulis ovatis bipartitis.

Hab. Falkland Islands.

Patches wide, very pale yellowish-green. Stems 2 inches long, matted together. Leaves in the same plane, their structure largely cellular, their anterior margin curved, the posterior straight and at an acute angle with the stem. Stipules wide as the stem, bipartite, the segments acuminated. Perigonia occurring sometimes in the course of the stems, usually at their tops, their leaves closely adpressed, erect, with tumid bases.

The present resembles our *J. planiuscula* in the large cellules of the leaves, but differs by its much smaller size, shorter semiovate leaves, and by the more entire segments of the stipules.

34. *J. sabuletorum*, (n. sp.); caule cæspitoso adscendente ramoso apice recurvo, foliis approximatis patentibus secundis subquadratis integerrimis apice subexcisis, stipulis minutis lanceolatis bipartitis, segmentis subulatis incurvis.

HAB. Falkland Islands.

Patches about 2 inches wide, pale tawny. Stems scarcely one fourth of an inch high, rising upright till they overtop the wet sand on which they grow, then reclining back and becoming horizontal. Leaves in five or six pairs, when moistened becoming homomallous, they are usually slightly notched or indented, more rarely rounded at their tops; their cells are very large. The top of the shoot is flattened by the terminating pair of leaves being compressed.

This, perhaps, is the minutest of this tribe of the *Jungermanniæ;* the rotundato-quadrate figure of the leaves with their shallow and wide sinus appear sufficiently to discriminate it from the other *Lophocoleæ*.

35. *J. rivalis*, (n. sp.); caule laxè cæspitoso adscendente subramoso, foliis distichis approximatis secundis integerrimis semirotundis, margine posteriore decurrente apice subexciso, stipulis ovatis bifidis segmentis extus unidentatis.

HAB. Port Louis, Falkland Islands.

Tufts loose, the inferior part apparently submerged, blackish-brown, the upper very pale olive-green. Stems nearly 2 inches high, with a few ascending or erect branches.

Leaves alternate, with a wide decurrent base, semirotundato-oblong, their emargination or sinus so short as to be scarcely perceptible; their structure is minutely cellular, their colour very pale on the younger shoots. Stipules scarcely wider than the stems, having a subrotund base, and being split above into two acuminate segments, each of which has exteriorly a single large tooth.

This species approaches our *J. grisea*, from Lord Auckland's group, which, however, is a smaller plant, with leaves narrower and obovate, while our *J. planiuscula*, from the same place, is much larger, with stipules longer and nearly entire. Both these species have larger cells to their leaves.

36. *J. grisea*, n. sp.; described before from Lord Auckland's group.

HAB. Falkland Islands.

37. J. *reclinans*, n. sp.; caule implexo prostrato subramoso, foliis imbricatis patentibus siccitate explanatis madore secundis ex lata basi oblongo-rotundatis integerrimis apice subbilobis, stipulis quadri-partitis segmentis setaceis, duobus mediis elongatis.

HAB. Falkland Islands.

Patches rather loose, growing on other *Hepaticæ* or *Musci*, pale olive-green. Stems supine, scarcely half an inch long, sparingly branched. Leaves with the anterior margin gibbous, having sometimes three, more commonly two, scarcely prominent lobes formed by a shallow indentation of the top; sometimes any appearance of a sinus is wanting. Stipules with a minute quadrate base, bipartite, each segment again sending exteriorly a shorter one; all of them setaceous, articulated, incurved.

This species has a strong affinity to our J. *multipenna*, from Lord Auckland's group; but then in the structure of the leaves the cells are more minute, the leaves are less gibbous anteriorly, and the stipules have none of their segments reflexed, but the central pair are far more slender and incurved.

38. J. *secundifolia*, n. sp.; caule subcæspitoso procumbente subramoso, foliis imbricatis erectis secundis oblongis emarginato-bifidis, segmentis lanceolatis integerrimis, stipulis bipartitis segmentis inæqualiter bipartitis laciniis subulato-setaceis, calyce terminali oblongo trigono, ore trilaciniato laciniis dentatis.

HAB. Falkland Islands.

Patches growing among *Musci*, small, pale olive-green. Stems scarcely half an inch long adscending, but the top of the shoot soon becoming supine and radicating. Leaves much imbricated, when moistened secund. Stipules conspicuous, with incurved setaceous segments. Calyx large, with three sides, of which the inferior is the widest; its mouth is ciliato-dentate.

This comes near the European J. *bidentata* L. and J. *heterophylla* Schrad., but differs from both by its closely imbricated and secund leaves, as well as the entire segments of the stipules.

39. J. *trachyopa*, n. sp.; caule implexo procumbente ramoso, foliis imbricatis erectis rotundato-quadratis apice trifidis cæterum integerrimis, stipulis latè ovatis bifidis segmentis acuminatis, calyce terminali oblongo trigono, ore laciniato dentato.

HAB. Hermite Island, Cape Horn.

A minute patch only was observed, growing from under a lobe of *Anthoceros punctatus* L., very pale green. Stems scarcely half an inch long, irregularly branched. Leaves closely imbricated, having three or four large teeth, between which the emargination occurs. Calyx large in proportion to the diminutive size of the plant. Capsule oval. Pedicel about the length of the calyx.

40. J. *leptantha*, n. sp.; caule implexo procumbente ramoso, foliis distichis complanatis subimbricatis erecto-patentibus ovato-oblongis apice emarginatis elongatè bidentatis integerrimis, stipulis minutis bipartitis segmentis subulatis extus unilaciniatis, calyce terminali lineari-oblongo trigono

apice trifido, segmentis emarginato-bidentatis, subintegerrimis.

HAB. Cape Horn.

Patches wide, pale but dusky olive-green. Stems two inches long. Leaves scarcely imbricated, nearly patent, having a narrow neck previous to dividing into two subulato-setaceous segments with a very obtuse sinus between them. Stipules minute, about as wide as the stem. Perichætial leaves erect, the two lateral dentate as well as emarginate, the third or stipular bifid, entire. Pedicel one inch long. Capsule oval.

The *Lophocoleæ* of Southern Regions are very closely related, yet very minute but constant marks of discrimination may be detected between them. The present differs from our J. *secundifolia*, by the leaves being complanate, not secund; from our J. *diademata*, by the less patent leaves, and from our J. *physanthe*, by the elongated calyx; and from all three by the segments of the mouth of the calyx being emarginato-bidentate.

41. J. *humifusa*, n. sp.; caule implexo procumbente ramoso, foliis approximatis erecto-patentibus complanatis oblongis antice gibbosis emarginato-dentatis cæterum integerrimis, stipulis bipartitis segmentis subulato-setaceis extus unidentatis.

HAB. Kerguelen's Island.

Patches wide, very pale green. Stems about an inch long, irregularly branched. Leaves approximated, but not imbricated, having broad decurrent bases; their emargination is very irregular, especially in the inequality of the segments. Stipules sometimes with a setaceous process at each side running back from their insertion along the stems.

This approaches nearest to our J. *leptantha*, from Cape Horn. Its leaves are more erect, have larger cells, their emargination is more irregular, their bases wider and more decurrent, while the stipules have their segments more setaceous.

42. J. *subviridis*, n. sp.; caule cæspitoso prostrato ramoso, foliis laxis secundis erecto-patentibus obovatis emarginato-bifidis segmentis obtusiusculis, margine anteriori gibboso, stipulis ovatis bifidis utrinque unidentatis.

HAB. Cape Horn.

Tufts two or more inches wide, very pale green when moistened. Stems scarcely half an inch long, decumbent, their tops ascending. Leaves scarcely touching one another, the anterior margin having the greater curvature, they appear bulging upwards; substance dense.

This species closely approximates to the *L. discedens*, Nees, but the leaves are shorter, wider, with a deeper sinus and more acute segments, and the stipules are not so slender.

(Chiloscyphus, *Nees v. Esenbeck*).

43. J. *pallido-virens*, n. sp.; caule implexo procumbente subramoso, foliis subimbricatis patentibus oblongis apice subemarginatis cæterum integerrimis, margine anteriore recurvo, stipulis minutis oblongis bifidis, segmentis subulatis extus unidentatis, calyce in ramo brevi terminali oblongo trigono subcompresso apice laciniato-ciliato.

HAB. Cape Horn.

Patches wide, pale yellowish-green, by exposure turning dark brown. Stems two inches long, sparingly divided; shoots nearly one tenth of an inch wide. Leaves minutely cellular, loosely imbricated, erecto-patent, their tops either rounded or truncate, having a single obscure tooth or, what is more common, a shallow emargination; the leaves are connected by the intervention of the stipule. This is minute, not above half as wide as the stem, concave, oblong, with setaceous segments, each bearing exteriorly a shorter setaceous tooth. The perichætium is a short branch of two or three pairs of erect adpressed leaves, of which the innermost has four or five laciniæ. Calyx oblong bell-shaped, having a deep division on one side.

This most resembles the *Chiloscyphus Endlicherianus*

Nees, from Norfolk Island, yet differs by its greater size, the less rounded tops of the leaves, their more convex figure, their margins without minute and narrow teeth, and by the stipule less laciniated.

44. J. *grandifolia*, n. sp.; caule implexo procumbente subsimplici, surculis complanatis, foliis imbricatis patentibus quadrato-rotundatis antice gibbosis atque margine recurvis integerrimis, stipulis minutis laciniato-dentatis.

HAB. Hermite Island, Cape Horn.

Stems four inches long and one eighth of an inch wide, pale green above, reddish-brown beneath. Leaves large, in two ranks, their upper margin is recurved, the lower not at all decurrent. In some instances the stipule seemed to connect the opposite pairs of leaves, but more commonly this connexion was not to be traced.

This is the largest of the tribe of *Chiloscyphus* of Nees; the disproportion between its great leaves and minute stipules being very remarkable. It may be known from the preceding by the broader and shorter leaves, their larger cells and more laciniated stipules.

45. J. *fusco-virens*, n. sp.; caule implexo procumbente subramoso, surculis adscendentibus, foliis imbricatis verticalibus patentibus secundis rotundatis integerrimis, stipulis bipartitis, segmentis setaceis extus unidentatis, calyce in ramo brevi terminali oblongo-campanulato subplicato, ore sublaciniato.

HAB. Cape Horn.

Patches small, dark reddish-brown, young shoots greenish. Stems two inches long, sending down densely set roots from their entire length. Leaves flattish, nearly meeting from the opposite sides. Stipules with a very short base, with two long subulate or setaceous segments, each of which bears on its outer side a similar but shorter segment. Calyces often two or more together, paler than the leaves. Pedicel nearly one inch long. Capsule oblongo-rotundate.

This species has many features common to our J. *australis* from Campbell Island; but it is a smaller plant and of a darker colour; the principal distinctive mark, however, lies in the stipules, which have far narrower segments. From the following it is distinguished by its greater size, by the leaves not being connate to the stipule, and by their larger cellules.

46. J. *surrepens*, n. sp.; caule disperso repente simplici, foliis imbricatis patentibus rotundatis integerrimis, stipula ovata subquadrifida connatis.

Hab. Cape Horn, on J. *Magellanica*, Lam.

Stems usually single, supine, brownish-white. Each opposite pair of leaves is connected behind by the stipule, and in front so exactly meet that it is difficult to say if they are united or not. Stipule not wider than the stem, ovate, bifid, with subulate segments that have each exteriorly a considerable spike.

(Lepidozea, *Nees v. Esenbeck*).

47. J. *tetradactyla*, n. sp.; described from Lord Auckland's group.

Hab. Hermite Island, Cape Horn.

48. J. *oligophylla*, Nees, Lind. et Gottsche, Synops. Hepat.

Hab. Cape Horn.

(Mastigophora, *Nees v. Esenbeck*).

49. J. *hirsuta*, Nees.

Hab. Falkland Islands; Hermite Island, Cape Horn.

(Radula, *Nees v. Esenbeck*).

50. J. *Helix*, n. sp.; caule implexo repente ramoso, foliis alternis remotis concavissimis integerrimis, lobo superiori ovato-oblongo obtuso inferiori ovali tumido involuto apice subacuto reflexo atque lobo superiori adpresso.

Hab. On J. *colorata*, L. et L. Hermite Island, Cape Horn.

Patches scarcely one quarter of an inch wide, yet conspicuous from their bright straw colour, contrasted with the dark purple of the *Jungermannia* on which it grows, Leaves few, alternate, distant except at the very summit of the stem, in figure not unlike *Helix putris*, L.

The present can scarcely be confounded with any other of the *Radulæ* of Nees, on account of its minuteness, its colour and its tumid leaves.

51. J. *flavifolia*, n. sp.; caule implexo procumbente ramoso, foliis imbricatis concavis patentibus integerrimis, lobo superiori ovato acutiusculo, inferiori elliptico involuto unidentato, calyce terminali ex angusta basi lineari-oblongo, compresso truncato integerrimo.

HAB. On J. *uncialis* (nob.), Cape Horn.

Patches minute, of a lively pale yellow colour. Stems scarcely one quarter of an inch long, irregularly branched; branches patent. Leaves closely imbricated, very concave, the top of the upper lobe frequently incurved, hence its being acute may escape notice; the lower lobe with a remarkable tooth at its outer termination, the rest incurved. Perichætial leaves longer than the cauline and more patent, the inner one with a flat oblong and rounded summit. The narrow base of the calyx taper, and scarcely covered by the perichætium. Capsule spherical or nearly so, pale brown. Perigonia are terminal, whitish, linear spikes, with closely imbricated tumid short leaves, leaving a channel in the middle of the spike along the stem. The acute and concave upper lobe of the leaf, and the minuteness of this species will readily distinguish it from every other known.

(Frullania, *Nees v. Esenbeck*).

52. J. *Magellanica, Lamarck, Encycl. Bot. v.* 3, *p.* 28.

HAB. Hermite Island, Cape Horn.

53. J. *lobulata, Hook. Musc. Exot. t.* 119.

HAB. Hermite Island, Cape Horn.

54. *Menziesii, Hook. Musc. Exot. t.* 118.

HAB. Hermite Island, Cape Horn.

(Lejeunia, *Sprengel*).

55. J. *subintegra*, n. sp.; caule cæspitoso procumbente

elongato subsimplici, foliis subimbricatis erectiusculis integerrimis, lobo superiori oblongo-rotundato, inferiori minuto ovato involuto, stipulis majoribus ovatis acutis, summo apice fissis.

HAB. Falkland Islands.

Patches several inches wide, pale olive-green. Stems nearly one inch long, usually simple, much elongated. Leaves amplexicaul, nearly erect, concave. Stipules large in proportion to the leaves, their fissures at their tops only visible when pressed in water and viewed with a lens.

We are not acquainted with any other species with stipules so large, relatively to the size of the plant; nor one in which the fissure at their summits is so inconsiderable.

56. *J. parasitica*, n. sp.; caule subimplexo procumbente ramoso, foliis subapproximatis patentibus concavis integerrimis, lobo superiori triangulari-ovato acuto, acuminibus antice curvatis, inferiori oblongo involuto, stipulis minutis bilobis lobis rotundatis integerrimis.

HAB. On *J. uncialis* (nob.), Cape Horn.

Stems dispersed over the surface of other *Jungermanniæ*, not distinctly visible to the naked eye, scarcely one-tenth of an inch long, irregularly branched. Leaves rather distinct, patent, their bases wide, their acute summits pointing forwards, the lower lobe slightly waved at its involute margin. Stipules scarcely wider than the stems, very pale green, their segments rounded and entire.

It is interesting to observe how closely the present resembles the Irish *J. ovata*, n. sp., a parasite, equally minute and with stipules exactly similar. It differs, principally, by its shorter leaves with wider bases and more acute tops, more distantly placed; besides, the colour of the plant is paler, the cells of the leaves more minute, and consequently their structure more dense.

(Noteroclada, *Tayl.*)

Char. Gen. Involucrum ex frondis terminatione concavâ, tumidâ conflatum, apice libero bilobum. *Capsula* quadrivalvis aut abnormiter disrumpens, setâ suffulta. *Elateres* spirales seminibus immixti. *Antheræ* frondi immersæ.

Frons *pinnatim lobata.* Stirpes *inter* Jungermannias foliosas *atque* frondosas *mediæ, his tamen multum affiniores.*

57. *J. confluens,* n. sp.

HAB. Cape Horn. Kerguelen's Island. Long since received from Sir William Hooker, collected by Gardner in Brazil. Mr. Wilson has also found it in Dr. Hooker's collection of *Musci* from the Falkland Islands.

Fronds about two inches long, of a dusky green, in flat patches, linear; by transmitted light a reddish longitudinal *axis* may be observed. Lobes complanate, erecto-patent, somewhat imbricated, oblong, rotundate, entire, the cells large, their substance carnose yet thin. *Involucrum* formed of the hollow and swoln extremity of the frond, projecting, however, beyond it in a bilabiate top, lips submarginate. Capsule rotundato-ovate, usually irregularly dehiscent. In the young capsule seeds were observed, four joined together within the same transparent and colourless integument. *Elateres* very short, curled. Pedicel one inch long or a little more. The calyptra, irregularly burst and bearing a style on its summit, remains at the bottom of the *involucrum.* The anthers oblong-ovate are half buried in the substance of the frond, in a double, longitudinal series, pressed; they pour out a white oleaginous fluid.

On the involucre or calyx, which curves upwards, are observable two parallel, slightly raised, dentate wings.

This genus approaches the *Fossombronia* of Nees; but the structure of its involucre, in a great measure formed of the extremity of the frond, is quite dissimilar; so is the horizontal position of the lobes.

(Diplolæna, *Nees v. Esenbeck*).

58. *J. pisicolor,* n. sp.; fronde laxe cæspitosa erecta dichotoma, lobis linearibus concaviusculis obtusis emarginatis uninerviis integerrimis.

HAB. Cape Horn.

Fronds nearly three inches high, pea-green in the younger and upper part, blackish below, two or three times dichotomous; the nerve in the dried state is very thin and whitish, but when the frond is thoroughly moistened, it swells and becomes of the same colour as the rest of the frond, while the lobes become concave or channelled; the branches separate at an acute angle. New fronds issue from the sides of the old by a bursting of the cuticle of the latter; such new shoots have rounded bases, which immediately send down roots; probably they separate in time, and continue an independent existence.

From our *J. tenuinervis* of New Zealand, the present may be known by its yellower green colour, its narrower lobes, which, too, are more elongated, by its taller size, but above all by its erect growth, in which respect, too, it widely differs from its congeners, *J. Hibernica* Hook. and *J. Lyellii* Hook.

(Aneura, *Nees v. Esenbeck.*)

59. *J. multifida*, L.

Hab. Falkland Islands. Cape Horn.

60. *J. pinguis*, L.

Hab. Hermite Island, Cape Horn.

61. *J. alcicornis*, n. sp.; fronde cæspitosa erecta lineari alternatim atque bipinnatim lobata, lobulis, linearibus brevibus subtruncatis, calyptris lateralibus linearibus albidis scabrosis, apice laceris.

Hab. Cape Horn.

Fronds tufted among other *Hepaticæ*, or *Musci* about one inch high; the younger parts of a lively grass-green, the lower and older brownish, and turning black in drying. The lobules rise to nearly the same level, consequently the lower branches have a dichotomous appearance; the lobes are widest where they are about to divide into lobules; these are linear, short, and end abruptly. The *Calyptræ* issue from the sides of the plant, and rise to such a height that their tops come on a level with the tufts of fronds; the *calyptræ* are very long, pale, carnose, and rough with projecting points. Pedicel about half an inch long. Capsule cylindrical.

This species is allied to *J. palmata* (Hoffm) but is far more compounded in its divisions, which are pinnate and not palmate, the lobules are far narrower, and the *calyptræ* are borne higher up on the frond.

(Metzgeria, *Nees v. Esenbeck*).

62. *J. furcata*, L.

Hab. St. Martin's Cove, Cape Horn.

63. *J. prehensilis*, n. sp.; fronde laxe cæspitosa erecta incurva alata; lobis alternis secundis pinnatis, pinnulis planis linearibus crassinerviis calyptra ex angusta basi elongato-obovata basi squamifera, perigoniis clavatis.

Hab. Hermite Island. Cape Horn.

Fronds loosely tufted, with broad hooked tops, the stem flat, brown, pubescent, the pinnules are smoother and of a pale olive-green. The *calyptræ* are brown, rough, and have at their bases a few variously laciniated scales, they occur towards the top of the plant at the base of the upper lobe, and on its inferior side, hence they are concealed as it were by the claws of the plant; sometimes two occur together. The *perigonia* are in similar situations, but upon different plants, they are clavate, and consist of a lobe, with its pinnules incurved and grasping each a large, spherical, pedicellated anther.

The nearest ally to our plant, is *J. eriscaula* (Hook.) but which is of a darker green colour, has the frond tripinnate, the pinnules narrower, the entire frond more elongated and supplied with more lobes.

(Fossombronia).

64. *J. pusilla*, L.

Hab. Kerguelen's Island.

MARCHANTIA, L.

65. *M. polymorpha*, L.

Hab. Falkland Islands. Cape Horn. Kerguelen's Island.

ANTHOCEROS, L.

66. *A. punctata*, L.
HAB. Hermite Island. Cape Horn.

BOTANICAL INFORMATION.

Extract of a Letter from MR. GARDNER *on his Voyage to Ceylon.*

On Board the Barque "*Morning Star*," between the Mauritius and
Ceylon (Lat. 4° 46′ S., Long. 67° 41′ E.) March 6, 1844.

MY DEAR SIR WILLIAM,

A few days after our arrival at the Mauritius, I did myself the pleasure of sending a few hurried lines to you by a vessel which sailed for London. We remained nearly three weeks at the Island, but as it rained heavily every day, with the exception of some three or four, I was prevented from making any lengthened botanical excursions. Indeed, excepting a few short walks in the immediate neighbourhood of Port Louis, I may say that I only made two, both of which have yielded many novelties to my herbarium. The flowering plants which I collected amount to above one hundred and twelve, and the ferns to upwards of forty. These have all dried remarkably well, notwithstanding that the rains have been both constant and heavy, and that the process has been accomplished on board ship. Mr. Bojer was kind enough to allow me to look over his collection of Ferns, and to give me specimens of all those of which he had duplicates to spare. These I find amount to upwards of one hundred and twenty species. They are principally Mauritian, a few only being from Madagascar and Bourbon. When I wrote to you, I had not then seen Mr. Newman, who resides near the Botanic Garden, which is at Pamplemousses, about seven miles from Port Louis. The garden is large, and being an old one, contains many fine large specimens of Indian trees and palms. Many of these were planted by Poivre, who I believe was the founder of it. It appeared to me, however, to be kept in very bad order, the greater part of it more resembling a jungle than a Botanic garden. Some of the finest plants I observed in it are those which M. Bojer introduced to the island from Madagascar. One of these is the remarkable *Bignonia articulata*, Lam. Two others which grow to the size of trees are the *Colvillea racemosa* and *Poinciana regia*, which have now become common in the island, and are its greatest ornaments. I take plants of both of them to Ceylon with me, along with many other things which Mr. Newman put up for me in a Ward's case. He possesses growing plants of the curious *Hydrogeton fenestralis.* The so-called tombs of Paul and Virginia being only at a short distance from the Garden, I visited them, and found near them a few plants that interested me very much. One of these is the *Pæderia sessiliflora,* which I afterwards found to be very common even high upon the mountains. One day Mr. Newman accompanied me on an excursion to a range of hills about four miles distant from the Garden, called Bonamour, where I made a pretty large collection. The woods which cover these hills are composed of small trees, a very few only of which were in flower, as the rainy season had set in but a short time before our arrival. In the more shady places, the ground and the trunks of the trees were covered with ferns, consisting of *Drynaria vulgaris*, which grew in the greatest abundance, *Adiantum rhizophorum*, fine plants of *Asplenium Nidus-Avis*, a handsome species of Smith's new genus *Isotoma*, a simple-leaved *Polypodium*, *Pteris lanuginosa* et *hastata*, a *Vittaria*, a *Nephrolepis*, very like one of my Brazilian ones, *Aspidium propinquum*, a creeping *Lycopodium*, and a *Mertensia*. On the stems of the trees I found a few kinds of *Orchideæ*, one of them *Angræcum aphyllum*, a most remarkable plant, but not in flower. The others, though in flower, I am unable to determine, from not having my books at hand. One of them, however, I cannot help thinking is my old Brazilian acquaintance, *Polystachia luteola.* Mr. Newman had once found *Ophioglossum pendulum* at this place, but could not again meet with it. It is a rare plant, but I have a specimen of it among the ferns I received from M. Bojer. Among the flowering plants I met with here, I may mention the beautiful *Ochna Mauritiana, Hugonia serrata,* a *Mussænda,* a *Gærtnera,* two species of *Memecylon,* several species of *Jossinia,* and a few *Rubiaceæ.* Near Pamplemousses I found all the ponds covered with the floating leaves and beautiful blue flowers of the *Nymphæa stellata.*

My second excursion was, however, by far the most interesting. This was to the summit of the mountain called La Pouce, which stands at the head of a valley which runs inland from Port Louis a few miles, and which rises to the height of two thousand six hundred feet above the level of the sea. The vegetation on this mountain may very naturally be divided into three regions. The first, which reaches to the height of about one thousand eight hundred, is the least interesting portion. The plants which appeared to be the most abundant on it, were the following: An *Acacia* very like *A. Farnesiana,* but not in flower, *Rhamnus lucidus,* a *Celastrus? Clerodendrum heterophyllum,* two species of *Diospyros, Quivisia heterophylla,* great abundance of *Jasminum Mauritianum, Erythroxylum hypericifolium, Ehretia petiolaris, Dodonæa salicifolia,* a *Prockia,* an *Eugenia, Pteris lanuginosa,* and *Adiantum rhizophorum.* The second region is comparatively flat being perhaps about a mile in length. It is much better wooded, and is very rich in plants, particularly ferns, and on the whole reminds me very much of some parts of the Corcovado mountain near Rio, only that they are much smaller, I cannot of course, name all the ferns in the mean time that I met with here; but among others, I may mention the following: *Davallia tenuifolia,* which is a most beautiful plant when growing in a mass. It covered many yards of the banks of a small stream, the latter being as common here as it is on the mountains around Rio de Janeiro, *Ochropters pallens* (the old *Adiantum pallens*) *Polypodium crinitum*, and several other species. The beautiful *Callipteris prolifera*, *Cyathea excelsa* et *canaliculata*, both tall tree ferns, several fine kinds of *Asplenium*, one of them *A. macrophyllum*, a small *Trichomanes*, several species of the different sections of *Aspidium*, a *Lomaria*, two simple-leaved kinds of *Acrostichum*, a *Vittaria*, &c. The flowering plants which I met with here were the following: *Tabernæmonta Mauritiana*, a *Gærtnera* in fruit, *Rubus rosæfolius*, which is indeed common everywhere, even to the tops of the mountains, but which is said to have been introduced from Java by Commerson, two species of *Erythrospermum*, *Dryopeia oppositifolia*, *Bletia sylvatica*, *Cynorchis fastigiata*, *Dracæna Mauritiana*, *Adenostemma Mauritiana*, *&c*. The upper part of the mountain is very much peaked, has a vegetation of quite another cast, but very few of the plants were in flower. They are mostly shrubs from two to three feet high. The following are such as I have been able to determine: a *Salaxis*, *Distephanus populifolius*, *Gnaphalium multicaule*, Lam., *Cylindrocline Commersonii*, a *Prockia*, *Geniostoma parvifolia*, Boj. &c. The herbaceous plants which I found here were a *Gnaphalium*, an *Hypoxis*, a *Mariscus*, and *Rottbœllia complanata*, which grows everywhere, from the sea level to the summit of the mountain.

On this excursion I was only accompanied by one of my fellow passengers. The day was one of the finest that occurred during our stay in the Mauritius, and we had consequently from the summit of the mountain a view of the greater part of the island. The country inland presents a vast valley, quite flat, and about from eight to ten miles in diameter, surrounded on all sides by high mountains. Like all others of volcanic origin, these are very rugged and peaked. One of them is the celebrated Pieter Both. M. Lesson has well observed, that the great valley above mentioned has evidently at one period formed the basin of an immense crater, and that the mountains which surround it constituted its walls. The first sight of it evidently recalled to my recollection Mr. Douglas's graphic description of the immense crater of Mouna Roa in the Sandwich Islands. How many ages must have passed away since the Mauritian Valley was filled with boiling lava !

G. Gardner.

Extract of a Letter from Ronald Gunn, Esq. *Van Diemen's Land.*

During February, 1843, I had occasion to ascend the Western Mountains of this Island, and go over the same ground as that described by Mr. R. W. Laurence in his Excursion, published in Vol. 1. of your Botanical Journal, page 235, and as I may clear up some of the points mentioned in it, I at once do so. I believe I am rather a better walker than my old friend, as I find I accomplished in one day what took him three.

Under Jan. 17.—His "Mountain Bird" is *Coronica fuliginosa*, trailing *Exocarpus* is *E. humifusa*. Creeping aphyllous shrub is *Bossiæa ensata, var.*, my 1059, or a new sp. allied to it, but I can detect no difference.

Under Jan. 18.—The *Veronica* is my no. 269; common also on Mount Wellington.

Under Jan. 19.—Two of the three lakes seen by Mr. Laurence are not "Arthur's Lakes," but very small ones, indeed still unnamed. He did not see the most western Arthur's Lake (there are two) which is a very large sheet of water.

Under Jan. 20.—It is *Cider*, not *Cedar*, tree, mentioned by Mr. Laurence.

My ramble over the same country yielded me a richer harvest, although at an unfavourable season and when I had other business on hand; since I was looking out for a summer sheep-walk in that elevated region, and for which it is well suited from its vicinity to Formosa. Arthur's Lakes are 3,388 feet above the level of the sea, and the country towards the

Peaks, mentioned by Mr. Laurence, gradually ascends until I should suppose the summits of the peaks themselves to be upwards of 4,000 feet. I annex some short notes of my trip.

On 16th Feb. 1843, I ascended the Western Mountains from Formosa, course south-west, and reached the summit in four hours' smart walking and climbing. Formosa is 806 feet above the sea, and the mountains where I ascended about 3,800 feet. At the base of the mountains the forest consisted of *Eucalyptus, Casuarina quadrivalvis, Banksia australis, Acacia dealbata* (n. 476) and *Exocarpus cupressiformis;* but, as I ascended, the *Casuarina* first disappeared, then the *Exocarpus*, and finally, at about 1,500 feet, the *Acacia dealbata* and *Banksia.* The *Banksia* subsequently re-appeared on the summit, near Arthur's Lakes, but none of the others. Above the sandstone rock, which underlies the trap, (of which the whole of the mountains are composed) at an altitude of 1,500 to 2,500 feet, I saw *Bedfordia salicina, Eurybia glandulosa,* the latter in flower in wet places, *Ranunculus scapigerus, Pultenæa,* No. 668, *Lomatia tinctoria,* in full flower, *Lobelia simplicicaulis* in flower, *Stackhousia monogyna* in fruit to the top of the mountains, *Friesia peduncularis, Coprosma hirtella* and *nitida, Geranium potentilloides* and the usual sub-alpine plants, but very few were in flower at this period of the year. Close to the top *Rubus Gunnianus* became abundant, and the *Telopea truncata, Orites revoluta,* and other shrubs, for the first time appeared. The only animal killed by us on our way up was a large wombat (*Phascolomys*).

The prevailing winds on the top of the mountains are westerly, and the minute you reach the top an extensive country opens before you as far as the eye can reach. Unless you look backwards on what appears to be an extensive plain 30 to 40 miles wide and of indefinite length 3000 feet below you, you would suppose you were still in a flat country and which in reality it is. The whole line of country from the Derwent at New Norfolk rises gradually and imperceptibly towards the north where the Rivers Ouse, Shannon and

Clyde take their rise and proceeding a little farther northwards, the mountains terminate in precipitous cliffs, 4000 ft. above the settled country just below. Dry's Bluff which is the north east point is 4600 feet high, and the range keeps nearly an equal altitude for 30 miles westward. To the south-east of that Bluff, it gradually runs off towards Oatlands, which is 1308 feet high, where it ceases to have the appearance of a range of mountains. Immediately, therefore on reaching the top you become exposed to the full force of the westerly wind, which is at that altitude cold even in the height of summer, as compared to the temperature you had been enjoying in your ascent on the lee side of the range. The character of the vegetation also changes in a few yards; the *Eucalypti* are stunted and crooked, shewing the marks of strong winds. The shrubs cling close to the surfaces of the rocks, and in sheltered gullies and small valleys alone do the plants venture to erect themselves in their natural position. I ascended close to the base of the Peaks mentioned by Mr. Laurence which must be upwards of 4000 feet high; the points of the peaks being a few hundred feet above the rest of the mountain top. I found the country sloped gradually towards the south and I followed one of the long, narrow plains which characterises this part of the mountains in that direction, in search of water; seven head of wild cattle were disturbed by our presence and ran rapidly off towards the south, where we followed. I never had seen the top of any of our mountains more dry, and it was not until after a diligent search for 3 to 4 miles that we found some welcome pools. Here we bivouacked for the night. At 6 P.M., therm. in the air, 49°., in the water 56°., wind S.W. From this point the *Eastern* Arthur's Lake, bore S.E. by S., distant about 6 miles.

17th Feb. Therm. 6 A.M. in air 46°, in water 49°.—Whilst my breakfast was being cooked I rambled a few yards round. I here perceived my two varieties of *Bæckia micrantha* (Nos. 306 and 815), which I at one time supposed to be distinct species, were in reality mere varieties. *Orites revoluta* in fruit. *Viola hederacea* and *betonicifolia*, *Acacia siculæformis* was abundant in fruit, *Cryptandra*, 716, in flower. *Monotoca empetrifolia?* (my 715) in flower, and many other plants common in our mountains. In walking towards Arthur's Lake, as indeed I had passed yesterday, *Callistemon viridiflorum* was common but seemed stunted. *Hymenanthera angustifolia*, or a plant very similar to it, covered some rocks close to my bivouack, but I could discover no flowers. If it is the *Hymenanthera*, it certainly assumed a habit very different to its usual one. In walking onwards I recognized some of my friends of the low country such as *Mniarum pedunculatum*, *Wahlenbergia gracilis*, *Eriochilus autumnalis*, *Linum angustifolium*, *Pelargonium* sp., *Stylidium*, and some few others, which certainly looked out of their place or like *Exotics* amongst their alpine brethren. *Veronica*, 269, was common. *Oxylobium ellipticum* was a very small shrub with small leaves, a foot high, very different to its aspect on the sides of the mountains, where it is a large shrub 5 to 6 feet high. In rocky places *Acacia*, n. 207, was common, as also *Bossiæa ensata?* 1059, *Lomatia tinctoria* covered large patches of ground as a social plant in full flower, the blossoms something like the *Hawthorn* and the *Banksia* 8 to 10 feet high, was in flower.

Running into Eastern Arthur's Lake is a fine stream called "Tumble-down Creek," from the water undermining its banks. Its course could be traced for miles, whilst walking on the plains which skirted its margins, by the borders of pale green coloured *Oritina acicularis* of Brown, (285), and *Orites revoluta*, (which have when growing the same colour as the dried specimens) and which are in the greatest profusion along its bank, growing to the height of 5 or 6 feet. These with *Leptospermum rupestre*, *Bæckia micrantha*, *Pilitis acerosa*, *Dracophyllum* (292 and 859) of two species, *Sprengelia incarnata* or *montana?* *Tasmania aromatica*, *Baccharis lepidophylla?* (123), *Bellendena montana*, *Pimelea sericea*, and various other plants, formed a dense and in many places almost impenetrable thicket.

Close to the northern side of Arthur's Lake I found a shepherd's station, and was subsequently astonished to learn, that in that remote part, which at Mr. R. W. Laurence's visit was deemed almost valueless for stock, there are now within a few miles six or seven persons who send stock to depasture during the summer months; viz., from December to April, after the sheep are shorn. At this time, twelve thousand sheep and about two hundred head of cattle occupied the vicinity of Arthur's Lakes. At the Great Lake, a few miles west, many thousands more were depastured. A very small portion of the land is granted yet; the greater part being occupied by squatters who pay the government a few pounds a year as rent for a certain number of acres; but as no fences are erected, each person usually rents about five hundred acres, but occupies two or three thousand. The practice with many is to erect a hut of sods, covered with *Eucalyptus* bark, thatched with grass, of a very primitive form, about November; or, if they occupied the ground, the previous season, repair the old hut, and immediately after sheep-shearing in December, the sheep are sent up with two shepherds per thousand sheep, and a cart with four months' supply of flour, tea, sugar and tobacco. Meat is obtained from the flock. When the weather indicates the approach of winter, about April, the flocks are removed to the low country, where the pasture begins to spring and the country to look green after the first autumn rains.

Close to the shepherd's hut I pitched my small tent, and as I was looking out for an unoccupied piece of ground as a sheep station for next season, I was not disposed to extend my rambles many miles farther from Formosa than I could help, and therefore made this my centre of observation. I walked to the Eastern Arthur's Lake about half a mile distant. It is a fine sheet of water which I judged to be about fifteen miles in circumference. On its margin *Drosera binata,* and no. 784, very abundant and close to the edge, yet in the water, where sheltered from the waves, *Villarsia reniformis,* 717, grew in profusion, but the cattle had eaten off almost every flower. *Isoetes setacea?* formed small clumps, two or three feet in diameter, in all directions, and the edge of the water was strewed with half decayed plants of it washed up by the waters. All the larger trees of *Eucalyptus,* close to the lake were dead, as also the *Leptospermum* on the margin, and I am informed all these trees extending more or less irregularly for forty miles, were killed by a severe frost in the winter of 1837. I have the less reason to doubt the fact as in many places the trees, where less injured, were throwing out shoots from the trunk. The small spray of the branches remained as when the leaves dropped off, and I could perceive no marks of fire. Many thousands of kangaroos were destroyed the same winter from the snow covering the ground for an unusual period.

During the day my dogs killed a brush kangaroo (*Halmaturus Bennettii*), it had a very young one, not an inch long, attached to one of its nipples in the pouch; two larger nipples being unoccupied. The tail of the young one was doubled up between its hind legs, the eyes were merely indicated by two translucent dots and the mouth and nostrils alone seemed perfect. Brush kangaroos are plentiful on the mountains, but the high price given for their skins will rapidly exterminate them. All the boots and shoes for ladies and gentlemen are made of kangaroo skin. Forest kangaroos (*Macropus major*) exist on the mountains, but are now very rare; they are the only gregarious species in Van Diemen's Land. The other animals on the mountains are the same as those on the low country, at least I found the *Thylacinus, Diabolus, Phascolomys, Didelphis* 2 sp., and *Phalangista* of one or two species, and our Fauna does not boast of many more. The *Ornithorhynchus* was plentiful at the mouth of Tumble-down Creek and in other ponds and places where the banks overhung the water and were of a material to admit of being easily penetrated by their burrows. I obtained from this place in a few days upwards of thirty specimens! and I have no doubt I should have had as many more, had I not found it necessary to stop the reward I offered for them. The *Ornithorhynchus* comes out in the twilight and after dusk, and may then be shot by an expert marksman, but as the only spot visible above water is the nose and eyes, the heads get much damaged by the shot. I had one of them alive, but it seemed stupid and miserable out of the water.

For many miles north of Arthur's Lake a species of *Eucalyptus* which yields what is called *Cider* is the prevailing one, and I believe it was more or less abundant in all the mountainous region previous to the severe frost already alluded to, which killed almost every tree in that part of the island. About Lake Arthur many are killed and most of the others more or less injured. This species (my n. 1084) is a handsome growing tree not usually more than 40 to 50 feet high, often less, but remarkably robust and umbrageous for one of the genus, branching from within a few feet of the ground. The bark is deciduous, blackish brown and white, sometimes smooth, but generally rough near the bush. The shepherds and stockkeepers look out for trees which indicate by some injury in the bark a flow of the sap externally or, as they call it, "a spring," they then with an axe cut into the tree about 5 or 6 inches, inclining the cut downwards so as to hold about a pint. The sap flows into this hole both from above and below, and when first made fills at least once a day, but later in the season, yields less or ceases altogether. The sap is lifted out with a spoon into any vessel and drank as it comes from the tree. Some trees yield it of a very thin consistency and slightly acid, others again yield a sweeter juice as thick as syrup, and very sweet; a tree is on tap for six weeks or two months. The effect at first to many who drink it is slightly aperient, but it ceases afterwards. It has never been obtained in any quantity or applied to any useful purpose. I brought a bottle of it with me, but two or three days after reaching home it fermented, blew out the cork and a large portion of it was lost. I have now sent two bottles of it to Dr. Robert Brown, and requested him to furnish you with some.

18 Feb. Them. in air, ¼ to 7 A.M. 51°. in the small rivulet, 53°.—Started to see the country lying between my tent and the Great Lake. Kept well to the south in our course, so as to sight the Western Arthur's Lake which is very large and quite equal to the Eastern one. From the south side of the Western Lake, the Lake River takes its rise and after flowing through a gorge in the mountains runs past Formosa, and joins the South Lake at Longford. The land between the two Lakes Arthur is low, being a narrow isthmus through which a small communication is kept up at all times. The country between Arthur's Lakes and the great lake is barren, rugged and high. I found *Pilitis acerosa* and *Dracophyllum*, 292 and 859 everywhere, also various other *Epacrideæ*. *Phebalium montanum*, *Pultenæa*, n. 319, on the highest ground. *Dracophyllum*, no. 292, seems to prefer the highest and most exposed places forming small round bushes so dense, that a bird could not penetrate into many of them. It is called "Honey Plant" by the people there who say that the flowers contain a large quantity of honey. In three and a half hours from starting, I reached a rising ground close over the Great Lake, which is certainly an immense and beautiful sheet of water; but the scenery in its vicinity was tame and did not possess one half the beauty of that on Lake St. Clair, which I visited two years before. The Great Lake has its flocks and herds in the summer time, but is abandoned in winter; its altitude above the sea is 3822 feet, and the lake itself is about sixteen miles long and five miles broad, almost divided into two, near the middle, by two projecting points of land which approach one another sufficiently close to admit of people fording across in the summer season.

We took a more direct course, however, about due east, and reached our tent pretty tired. In one of the vallies I saw the *Bedfordia linearis*, *Ozothamnus*, n. 240, and a new plant in *Umbelliferæ*, no. 1253.

19th Feb. half-past six A. M. Therm. in air 49°; in rivulet 49°. Morning clear and sunny. Walked eight or ten miles towards the north to ascend the summit of "Brady's Look-out." the peak which Mr. Laurence was unable to ascend. It is the highest land in that quarter. After a very fatiguing excursion, as all our feet were swollen from the severe walking on hard stony ground, we got safely to the top. On my way I saw a novelty among the plants; *Helichrysum acuminatum?* n. 244, covered the ground with a golden carpet, and I loaded myself with specimens; but a few minutes after gathering I found all the flowers had closed up, and their beauty in a great measure lost.

On the top of the peak I proceeded to take the bearings of Mount Wellington at Hobart Town, and other distant points, which were visible from my elevated station; but you may judge my surprise when I found that my pocket compass, placed on the rock, indicated Mount Wellington to be at least ninety degrees from where I knew it ought to be. On taking my compass off the rock I then found that the Green-stone of which the hill was composed was highly magnetic, with polarity. I then placed my compass on the top of my walking stick, (which has an iron blade screwed into the lower end for digging plants) and took the correct bearings. On the bare rocks of "Brady's Look-out" my no. 322, of *Compositæ*, was very abundant.

After setting fire to the brushwood on the side of the peak, I started toward Lake Arthur. A small snake was killed as we set out, and I only saw another during my trip. I was told that there are some of large size on the mountains, which I think possible, but I did not see any. By a large size I mean five to six feet in length, which is large for a Tasmanian snake. About two miles from Lake Arthur I came upon what had been an aboriginal encampment; it consisted merely of strips of bark laid over prostrate logs of wood, so as to project a little over. Under this slight shelter they used to lie with very small fires in front. The bark was taken off the trees by separating it from the wood near the base, and then pulling it outwards. Some of the trees had notches cut in them by the blacks who had ascended them in search of opossums. I should suppose that this country would be a favourite resort of the aborigines, especially during the summer months, as kangaroos are plentiful.

20th Feb. Therm. in the air and shade, six. A. M. 49°; ditto in rivulet 53°.—I started homewards this morning. On the side of the mountains in descending, I saw *Veronica formosa*, (527) *V. labiata, Pimelea incana,* and some other low country plants. The eastern side of the mountains being sheltered from the prevailing winds and rains, exhibits an entirely different vegetation to the western side at corresponding levels. The western side is comparatively level, grassy, and very wet; the eastern, very precipitous and rocky, without any water until you descend about 1,500 to 2,000 feet, when numerous springs run out from under the bases of rocks and stones which have fallen from the basaltic cliffs which crown the tier. Temp. of the springs 49° Fahrenheit.

At Formosa I got into my gig, and reached Launceston in the evening, carrying in with me my collection of specimens.

Besides the plants I have incidentally mentioned as on the top of the mountains, there are, amongst others—

Ranunculas nanus, very abundant everywhere.

Tetratheca, my no. 309.

Pittosporum bicolor, var.; my no. 651.

Spergula affinis.

Hypericum involutum, and *pusillum.*

Geranium potentilloides and *brevicaule;* on the top.

——— *parviflorum,* common on the east side to 3,000 feet up.

Oxalis microphylla, sparingly.

Lotus corniculatus, very common.

Acacia siculæformis, plentiful; but no other species whatever.

Acæna Sanguisorbæ.

Epilobium montanum, and others.

Leptospermum, 289. This is the largest species in V. D. L. growing 20 to 25 feet high, and with trunks 3 to 4 feet in circumference. It is only seen in the higher parts of the colony from about 1,300 feet upwards, growing on the margins of streams.

Coprosma nitida, and *pumila.*

Compositæ, very various, and I may name—

Celmisia longifolia ?

Craspedia macrocephala.

Cassinia, of different species.

Podolepis, my no. 362.

Ozothamnus, my no. 240.

Helichrysum acuminatum, and various species of *Brachycome* and allied genera.

Forstera ? sp. my no. 443, forms its large dense cushions only on the higher parts of the mountains, and ceases altogether near the level of Lakes Arthur. With *Forstera* are associated *Aretia?* (my no. 364) and various other plants. The cushions, as they are called, from their elasticity, smoothness, and form, are usually 2 to 4 feet in diameter, nearly round, rising about a foot high in the centre, and sloping off towards the edges. They spread by the edges, and the centres are sometimes decayed.

The mountains may be called the home of the *Epacrideæ*; they abound both as to species and individuals. The species, however, *peculiar* to the alpine regions are not so numerous as at first sight they would appear; the principal are—

Monotoca empetrifolia.

Decaspora thymifolia; and of the genera

Leucopogon Cyathodes and *Pentachondra,* I may quote Nos. 299, 197, 1192, 313, 314, 519, 1194, 124, 1195, 1196.

Epacris, 316, 1210.

Sprengelia montana.

Pilitis acerosa, very abundant.

Dracophyllum, Nos. 292, and 859.

Gentiana montana, 1842, affects the higher parts of the range; and *Villarsia,* my 717, is in Lakes Arthur, Lake St. Clair, and also at greater altitudes in still water.

Gratiola pubescens? my no. 724, is abundant as high as 3000 and probably higher.

Veronica, 269, is plentiful in some places.

Ourisia integrifolia, on the margins of the streams where shaded.

Euphrasia, two or three species.

Plantago, sp.

Species of *Grevillea, Hakea, Orites, Banksia, Lomatia, Telopia,* and *Bellendena,* all above 3,400 feet.

Pimelea sericea was the only species I saw on the top.

The *Casuarinæ* do not appear to approach the region of the *Coniferæ,* and I saw none of the *Cassythaceæ, Chenopodeæ,* or *Solaneæ,* in the mountains.

Of *Orchidaceæ* I saw very few, this being the rainy season.

Eriochilus autumnalis.

Prasophyllum alpinum? and

an orange coloured variety? of *Diuris lanceolata.*

As all the specimens, however, were of one colour it may be another species.

Gramineæ are abundant in the open places about Arthur's Lakes, and are in greater or less quantity to the highest parts of the range.

In all the lakes *Isoetes setacea?* is abundant, or perhaps a new species.

My collections will guide you as to the other alpine plants, but my present observations apply exclusively to that portion of the Western Mountains lying immediately to the northward of Arthur's Lakes, and *above* their level, as I did not extend my ramble, on the top of the range below 3,388 feet.

RONALD GUNN.

Note on the CIDER TREE, *above noticed, by* J. D. HOOKER, M.D. R.N. F.L.S.

It has long been known to the colonists of Tasmania that a species of *Gum tree* inhabits the elevated table-lands of the interior of that Island, which, during certain seasons of the year, furnishes a copious supply of a cool refreshing liquid, called cider by the stock-keepers. This circumstance has given rise to the apellation of "*Cider tree*," a name for several years known to naturalists, who were, however, till very recently, ignorant of the real nature of the tree in question.

The first particular notice of it which, as far as I am aware, ever appeared in print, is contained in Ross's Hobart Town Almanack for the year 1835, where, in a list of the native plants chiefly drawn up by Mr. Backhouse, the Cider-tree is mentioned as a species of *Eucalyptus* growing in the higher parts of the Island, and on the tops of mountains. In Mr. Backhouse's valuable botanical notes on the Vegetation of Australia and Tasmania, that gentleman mentions it as not having been seen by him, and as producing a liquor resembling black beer, obtained by boring the trunk. Lieut. Breton, in his "Notes of an Excursion in Tasmania," printed in the Tasmanian Journal, at v. 2, p. 140, more particularly notices this tree, and the method employed for collecting the sap. He says, "The shepherds and stock-keepers are in the habit of making deep incisions in the bark, wherever an exudation of the sap is perceived upon the bark. The holes are made in such a manner as to retain the sap which flows into them, and large enough to hold a pint. Each tree yields from half a pint to a pint daily, during December and January; but the quantity lessens in February, and soon after ceases. The cider or sap of the tree has an agreeable subacid taste, and sometimes is of considerable consistency. It is said to have an aperient effect upon those who drink much of it."

During the stay of the Antarctic Expedition in Hobart Town, Mr. Gunn showed me small specimens of the tree, procured from a friend up the country, which, though imperfect, evidently belonged to a new species of *Eucalyptus*. Being anxious myself to see, in its native habitat, a plant which is considered of no little importance in a colony where almost none of the vegetable productions afford either food or refreshment to the traveller, I made an excursion to the centre of the Island in the month of October, 1840. Mr. Thompson of Marlborough kindly accompanied me to a small forest of these trees, which occupied several square miles of flat table land, intersected with marshes, at an elevation of 4,000 feet above the sea, and not far from Lake Echo. Few other species grew amongst it, nor did the trees grow very close together, there was always space enough to ride between them, there being no brushwood under their shade. The individual trees are well described by Mr. Gunn; and their uniformity in height, and the smoothness of the grassy or boggy land between, gave to the whole wood something of the appearance of an orchard, and quite unlike any other forest scenery that I had witnessed in the colony or elsewhere. The whole scene was dreary and desolate in the extreme, from the lurid colour of their foliage, the want of some striking object either of rock or tree, and of any of the animal kingdom except the solitary snipe, kangaroo, or black swan. In one respect, however, this forest was an improvement upon the more gigantic vegetation through which we had ridden in ascending to the table-land: for the severe frost, mentioned by Mr. Gunn, had killed all the other and larger species of *Eucalyptus*, especially on the flat grounds, similar to, but at a lower elevation than those on which we were. For many miles on the road to the lakes, our course had been amongst the tall trunks of dead Gum trees, from eighty to a hundred and thirty feet high, most of their trunks blackened on one side by the fires which the natives had at various remote periods kindled in the forests, the charred portions forming a curious contrast to the whiter sides whence the bark had flaked off. On the banks of Lake Echo, a beautiful sheet of water, a similar death-like scene met the eye. Gum trees, Leptosperma, Hakeas, and Banksias, all seemed as if they had been suddenly struck with some mortal disease in the full vigour of their growth, and in their prime of life. One huge *Eucalyptus*, stretching its sound but bleached and leafless arms over the lake, appeared the stricken monarch of the lifeless forest. The silence and desolation of the whole scene brought most forcibly to my mind the description of a plague-smitten city: it was an analogy in the vegetable world to Petra, Idumæa and Babylon, as they now appear.

I have dwelt more at length on the effects of the great frost of 1837, as it proves at once how much hardier this species is, which, though growing at a much higher elevation, and on a marshy plain, where the effects of frost are always the most severely felt, was almost uninjured. It is further peculiar in never inhabiting analogous altitudes on the mountains of other parts of the colony. It appears eminently a gregarious species, capable of enduring the rigorous climates, the sharp frosts and heavy rains of the table-lands, but not the rude blasts and cutting winds of the mountain tops.

In describing this species, perhaps the most interesting of an immense genus, which forms four-fifths of the forests of Terra Australis,* I am anxious that it should bear the name of R. C. Gunn, Esq., a gentleman whose name will ever be known as the great promoter of all branches of natural science in Tasmania, and to whose kind aid and experience I am indebted for much that I know of the Botany of that colony.

EUCALYPTUS GUNNII, *Hook. fil.*; ramulis junioribus floribusque glaucis, foliis alternis petiolatis lanceolatis v. elliptico seu oblongo-lanceolatis rarius ovato-oblongis magis minusve acutis acuminatis v. mucronatis utrinque opacis venis obscuris, petiolis folio subquadruplo brevioribus, pedunculis solitariis axillaribus teretibus trifloris petiolo sub brevioribus, cupulis turbinatis breviter pedicellatis pedunculi longitudine, operculis hemisphæricis cupulæ dimidii longitudine sed latioribus, mucrone valido basi lato terminatis, fructibus latioribus elliptico-turbinatis ore paulo contracto valvis 3-4 interdum porrectis.

HAB. On the elevated table lands of the interior of Tasmania, especially in the neighbourhood of the lakes. (*Gunn. n.* 1084, 1080, 1082).

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* Brown, in Botany of Flinders' Voyage, II. 547.

As is the case with other species of this most difficult genus, no dependence can be placed upon the size of any of the parts or on the form of the leaves. The branchlets are slender, terete, nearly smooth, the younger very glaucous. The leaves, which seldom exceed two inches in length, vary between linear-lanceolate and oblong, but are sometimes broadly ovate, with a mucro, these broader leaves frequently terminate the branches. The peduncles are generally axillary, sometimes lateral, but always solitary, and never more than three-flowered, from 2-4 lines long, stout and patent. Cupulæ exactly turbinate, sessile or generally shortly pedicellate, 1½-2½ lines long, covered with fine, glaucous bloom. Operculum less than half the length of the cupula, hemisphærical, tapering on the very summit into a short, stout, erect mucro. Stamens bright yellow. Fruit elliptical, turbinate, broad at the base, 2-3 lines long, about two-thirds as broad or rather more, mouth slightly contracted. At the time when I visited the habitat of the Cider-trees, the sap had not commenced to flow, and the wood, which is of a pale yellow colour, merely tasted, when fresh cut, rather sweet. I am indebted to Mr. Gunn for a bottle of the fluid, collected about two years ago, it has now a very acid taste. For the following interesting analysis of it, I am obliged to my friend Dr. R. D. Thomson of Glasgow.

Specific gravity 1338.1, water being 1000. The smell resembles that of foreshot spirits, that is, a faint alcoholic fluid. When distilled in the water-bath a distinctly acid fluid came over which smelled of alcohol, the liquid in the retort remaining also acid. The acid was neutralized by saturating with carbonate of soda. On evaporating the saturated solution fine needle-shaped crystals remained which, when heated with sulphuric acid, emitted a strong smell of acetic acid and proved to be acetate of soda. The liquor in the retort, when evaporated, afforded a quantity of syrup, and the fluid, smelling of alcohol, was proved to contain that substance. The cider therefore consists of

Sugar,
Acetic acid,
Water,
Alcohol,

besides a small quantity of albuminous substance, coagulated by heat, and which probably acted as the ferment in converting the sugar first into alcohol, and then into acetic acid.

J. D. HOOKER.

Journal of a BOTANICAL MISSION *to the* WEST INDIES *in* 1843-4, *by* WILLIAM PURDIE, *Collector for the Royal Botanic Gardens of Kew.*

Monday, April 17th, 1843, I left Falmouth, in the royal mail steam-ship, Forth, with fine weather, and reached Corunna at six o'clock, A.M., on the 20th. This town is prettily situated on one wing of the harbour, which is terminated by the Fortress. The country around Corunna is much undulated, but presents a barren appearance, a few stunted trees of *Pinus sylvestris,* scattered over the mountains, being all that could aspire to the title of a tree. A species of *Bartsia, Cotyledon umbilicus* (on every wall), three species of *Anagallis,* just expanding their flowers to the morning sun, several species of *Ranunculus,* and two of *Urtica,* were the most common plants round the town. Nothing can exceed the wretched appearance of the inhabitants of this place, lounging in groups at every corner, ragged, and their countenances squalid in the extreme. An abundance of strawberries in the market afforded evidence of our southward progress.

After a stay of four hours, to take in coals, we sailed for Madeira, carrying with us seven of the passengers of the unfortunate Solway, and reached Madeira early on the 24th.

The town of Funchal has a very lively aspect. After a visit from the health-officer, we landed. The gardens were very gay, oranges scenting the atmosphere with their fragrance; *Bananas* are cultivated, but do not look healthy; *Verbena, Heliotropes, Salvias,* in great variety, and of immense size, compared with those in English gardens, were flowering profusely.

Adiantum Capillus-Veneris adorns every rock and wall, and is much larger than it ever attains in Great Britain. The commoner plants of Madeira are identical with those of England; *Trifolium, Ranunculus, Plantago, Urtica, Stellaria, Convolvulus,* &c.

I was much pleased with the look of the vineyards, which are formed of a succession of terraces, six feet or more wide, according to the nature of the ground, up the almost perpendicular sides of the mountains to a considerable elevation; and although luxuriant in many places, there is not more than a foot of soil, and that not of the richest description, for them to grow in. They are trained on rude wooden trellises, about a yard high, and gave promise of an excellent crop. Thermometer at noon, 75° in the shade.

The scenery of the south side of the island presents little variety, except its lofty and undulated mountains, being destitute of native forest; a few patches of *Pinus maritima* were the only trees on the mountains.

After a stay of five hours, we proceeded, and twelve days of fine weather brought us in sight of Antigua, a picturesque island. Passing St. Kitts, Nevis, etc., we reached St. Thomas on the morning of the 7th of May. The town of St. Thomas is neatly built and prettily situated on three slightly elevated hills, at the base of the harbour. The island presents a very undulated aspect, but there is no land of any great elevation; the hills above the town rise to 800 feet, which is the highest land in the island, and are covered with a stunted brushwood. I observed *Plumiea rosea* and *alba, Brunsfelsia Americana, Anona muricata* and *palustris, Cerbera Thevetia,* several showy species of *Bignonia,* of which I obtained seeds, *Chrysophyllum Cainito, Dolichos pruriens, Canavalia rosea, Guilandina Bonduccella, Aristolochia, sp., Hibiscus populifolius, Pothos, sp.*, and two species of *Tillandsia, Opuntia communis, Cereus repandus*, and *Agave Kuratto*, on rocks facing the south; the latter growing in thousands, now presenting its pyramids of golden flowers, had a very imposing effect. The above, with several species of *Solanum*, form the principal part of the vegetation of the island. A species of *Lastræa*, and one of *Hemionitis*, were the only *Ferns* I saw. The fences of *Bromelia Pinguin* formed a striking contrast with those I had left behind me in England. The vegetation, generally, is anything but luxuriant; *oranges* are cultivated sparingly; the *cocoa-nut* is more abundant, but confined to the habitations of man, and is generally thirty to fifty feet high. A few specimens of *Areca oleracea* and *Phœnix farinifera*, in the gardens of the town, had a very pleasing effect. The *sugar-cane* is but little grown, there being few localities adapted to it, so that St. Thomas is almost entirely dependent for its supplies on the small island of Santa Cruz.

After a stay of three days, during which the weather for the most part was very wet, with the thermometer never below 80°, the maximum 84°, we sailed for Porto Rico, and reached it at 8 o'clock, A.M., on the 10th, and only stopped to land the mail. This is a rich and romantic island, the vegetation more luxuriant than any place I have seen, and presents every conceivable variety of scenery. The mountains of the interior rise to a considerable height along the coast. The flying-fish were starting up in shoals, alarmed at the noise of the steamer. We soon came in sight of St. Domingo, and after two days' and nights' sailing, close to the shore, we sighted Cape Hayti. This is the most magnificent country I ever saw, the loftiest mountains being covered with a luxuriant forest, and the extensive plains appearing impenetrable; not a trace of cultivation, nor the slightest indication of its being inhabited was perceptible till we reached Cape Hayti, which, from the effects of the late dreadful earthquake, is literally a heap of ruins. After landing the mail, we proceeded, the country preserving its luxuriant aspect, to the western extremity. The morning of the 13th brought us in sight of Cuba, and we reached St. Jago de Cuba at nine o'clock, A.M. Vegetation appeared to be suffering from the continued dry weather; during our stay of three hours, the thermometer stood at 94° in the shade, at eleven, A.M. We sailed from St. Jago and reached Kingston, Jamaica, early on the 14th, after a passage of twenty-eight days of fine weather. The lofty mountains of the interior have a very imposing effect, on entering the harbour of Kingston; the town itself is built nearly on a level with the sea, and offers nothing remarkable in its appearance.

After a few days' preparation for my excursion, in which I was kindly assisted by Dr. Macfadyen, to whom I carried a letter of introduction from Sir W. J. Hooker, and who generously invited me to consider his house my home whenever my duties should call me in Kingston, and to make that the dépôt for my plants, etc., thus setting my mind quite at rest on that score, I left Kingston on the 19th for the Port Royal Mountains. I was accompanied by Mr. Hartweg, Botanical Collector for the Horticultural Society of London, who was on his way to England, and felt desirous of making the most of his few days' stay in Jamaica. Passing through the plain of Liguanea, which is completely overrun with *Mimosa tortuosa* and *M. juliflora* (which often prove fatal to cattle from eating the seeds), *Guaiacum officinale*, covered with its rich blue flowers and yellow fruit, contrasted beautifully with its dark green foliage, and seemed to bear the arid plains with impunity. *Cereus Peruvianus* and *repandus* are used for making fences in the following manner. A row of *Bromelia Pinguin* is planted on a raised bank, about four feet in height; the sides are sloped to an angle of about 60 degrees, against which are placed pieces of the above *Cereus*, about five feet in length, which generally send up shoots from the bottom, and make at once a formidable fence. This plant forms a prominent feature in the landscape of the plains, which, from the continued dry weather, presented very little in flower. As we approached the Mountains, vegetation became more luxuriant, and the scenery increased in grandeur. On moist banks, I obtained plants and specimens of *Lobelia longiflora,* (this is considered poisonous to cattle) as also of *Echites suberecta* and *umbellata,* both species abound in the plains and are very showy. Mangoes are exceedingly plentiful, and although an introduced plant, the *Mangifera* threatens, at no distant period, to assume the sovereignty of the soil. It bears the worst of treatment with impunity and I observed several fine specimens, that are made chopping-blocks of by the Negroes, without the least apparent injury. There is none propagated, except by seeds, and consequently scarcely two trees are alike, as regards the flavour of their fruit. Although they were taken from a French prize, and only numbered, connoisseurs declare that they know each variety, say as number eleven, as soon as they see it, some being good, but a great many not eatable. All domestic animals are fond of *mangoes,* and they are considered very fattening both for man and beast.

We reached the Botanic Garden Inn by night, a delightfully cool place, as compared with Kingston. The Hope river, a considerable stream running in front of the Inn, no doubt contributed materially towards cooling the atmosphere. The elevation cannot be more than 400 feet above the sea. The morning of the 20th being very wet, it was mid-day ere we started. Crossing the Hope river we reached the site of the old Botanic Garden, now a complete wilderness; some fine trees of *Pandanus spiralis, Phœnix farinifera and Lagerstrœmia Reginæ,* are among the few remains of this once noble garden. I gathered specimens of a pretty *Justicia,* two species of *Adiantum,* a *Pteris,* and several *Polypodia; Bignonia longissima,* a singular and beautiful tree, with two kinds of *Capparis,* were abundant. *Stizolobium urens* is a large climber, and I obtained seeds of it. The scenery, although picturesque, as we ascended through the first range of mountains, is not remarkable for luxuriant vegetation. *Garrya Fadyena* was abundant at an elevation of 4000 feet, with a few scattered plants of *Alsophila aspera*, an elegant and beautiful *Tree-Fern. Maxillaria Barringtoniana, M. discolor, Epidendrum cochleatum, umbellatum and fragrans*, with some very fine tufts of *Schomburgkia sp.*, were the only orchidaceous plants we met with.

We reached Flamstead, the residence of the Rev. C. Fyfe, agreeably situated on the summit of this range, about 4500 feet above the sea, and were kindly accommodated with beds by that gentleman.

The climate at this height is delightfully cool, thermometer at 6 evening, 60^0, with a refreshing breeze. At this elevation European vegetables succeed admirably, the *turneps, carrots, potatoes, cabbage, lettuce, radishes* and *onions*, would challenge competition, even in Europe. *Apples* also thrive and bear well, and are of good quality. A gentleman in this district informed me that he, at one time, realized 400 pounds a year by his plantation of this fruit.

22nd. Starting early for St. George's Gap, I was surprised to find so few plants in flower. *Lisianthus longifolius* was abundant on marly banks, and I secured seeds and specimens; also of a singular *Salvia*-like shrub, I believe *Eriocalyx sp.*; and a solitary plant of a beautiful white *Ipomæa*, with a few flowers expanded, this I believe is not in cultivation, and cannot fail to become a general favourite: its habit is that of *I. Horsfalliana*, the leaf is three-lobed, the flowers of the most delicate white, and borne in more than ordinary profusion. In the ravines grew immense trees of *Bombax Ceiba*, covered with *Tillandsias, Broughtonia sanguinea*, &c. but perfectly inaccessible. A species of *Piper* and *Bromelia Pinguin* overran a considerable tract. As we approached the Gap, the natural forest begins, which altogether changes the aspect. *Ferns* become abundant, also *Garrya Fadyena, Myrica Mexicana, Podocarpus coriacea*, several species of *Lycopodium* and *Columnea hirsuta*; and here, for the first time, I saw the arborescent Ferns to advantage, 20 to 30 feet high, crowned with light and elegant fronds: their stems, covered with the rhizoma and fronds of other scandent Ferns, imparting a grace and elegance to the scenery, such as I had never before beheld. The beautiful *humming-birds* were darting with great velocity from flower to flower, exhibiting no timidity, and often approaching within a few inches of those, whose only desire was to destroy them. A species of *Neottia*, resembling *N. speciosa*, but flowering before the leaves appear, we met with sparingly.

24th. We returned to Kingston through a picturesque country, still presenting very few plants in flower, and on the 26th quitted that town for St. Mary's, by way of Spanish Town. In a lagoon near the ferry, *Pontederia azurea* was luxuriating, a beautiful aquatic, producing its deep blue flowers in abundance; this is worthy of a place in every stove. In the salt marshes I observed large tracts, completely covered with *Batis maritima*, a singular plant, called *Jamaica Samphire*, which makes excellent pickle. The extensive Lagoons about the ferry on both sides of the road exhibit *Typha latifolia*, an old acquaintance in Europe, I believe identical with the European plant; also *Alisma cordifolia*, with several species of *Cyperus*. We reached Spanish Town in the evening; the heat in travelling through these savannahs is great, and the vegetation by no means interesting, a few species of *Mimosa* and *Cassia* forming the principal vegetation.

Slept at Spanish Town, and started at five o'clock, A.M. of the 27th, by the outlet of the Cobri; after passing through about eight miles of plain, the road became rocky and the vegetation somewhat changed; I saw two fine species of *Laurus*, scenting the atmosphere with their fragrance, *Portlandia grandiflora*, very beautiful, about 20 feet in height, covered with its trumpet-like flowers. Crossing the Rio Cobri, the rocks rose lofty on both sides. On moist banks *Gesneria acaulis* was abundant, a pretty species; the woods are here very luxuriant, immense trees of *Cedrela odorata*, and *Bombax Ceiba*, were covered with Bromeliaceous plants, the highest branches not being secure from their invasion. On the left bank of the Rio Cobri, the rocks rise almost perpendicular to about 500 feet, covered from the water's edge with a forest of *Thrinax parviflora*, an elegant palm. By this time, the rain set in, and a few minutes sufficed to drench us; we, however, proceeded and saw *Iantha pallidiflora*, *Oncidium pumilum* and *Carthaginense*, common on Logwood hedges. Passing some well managed sugar estates, the country becomes more undulated, and for the most part cultivated. In the afternoon, we reached Dr. MacNab's, at Woodridge, who kindly received us: during our stay of two days, the rains were almost incessant; I, however, obtained a few orchidaceous plants, and a quantity of specimens, among which was an arborescent *Fern* of remarkable habit, I had not before seen. The plants here grow much more luxuriantly than on the south side of the island, the extensive tracts of *Logwood* and *Mimosa* disappear, and the vegetation is as much more varied as it is beautiful.

Wednesday 31st. Returned to Kingston, by way of Stony Hill; this district is entirely cultivated by the Negroes, with vegetables, for the Kingston Market; the *Pineapple* growing side by side with the European vegetables, beneath the shade of the noble foliage of the *Banana*, each in the highest perfection. *Epidendrum fragrans*, *cochleatum* and *diffusum*, with a species of *Bletia* (terrestrial), were abundant. *Schomburgkia sp.* was also common, a pretty *Limodorum* (terrestrial) grew sparingly.

On reaching Kingston, I found the steamer ready to sail, and packed up my few collections, and dispatched them to prepare for a more fertile district. I found it rather difficult to obtain a servant, the Negroes having an aversion to constant employment. The first to whom I spoke thought the excursions too serious and made his exit the next day. The second I was obliged to part with, from his dissolute habits; the third is with me still, and I hope may turn out better. This enabled me to prepare for my visit to the Blue Mountain Peak, so taking with me a sufficient quantity of paper, I left Kingston on the 6th of June, by way of Penn Hill, through a mountainous country.

Brassia maculata was flowering in immense patches on the rocks for which this district is remarkable; the roads are very narrow in these mountains, and a false step would precipitate the traveller several hundred feet perpendicular. The numerous fire-flies were lighting their lamps long before I arrived at Penn Hill. On reaching it I was sorry to find A. Finlay, Esq. had been obliged by ill health to leave for a warmer climate, a gentleman to whom I was obligingly supplied with a letter of introduction from Miss Wray. The night breeze had set in, which was very cold, thermometer 57°. I was kindly accommodated with a bed by the intelligent overseer, Mr. Brakenridge, and morning disclosed a view of the most romantic description; innumerable deep ravines and lofty mountains, covered with a rich vegetation, at the back of which rose the Blue Mountain Peak in sable majesty, several thousand feet above the rest. Penn Hill is beautifully situated in the midst of a plantation of luxuriant Coffee, a shrub grown only in the mountain districts. Starting early on the 7th for Radnor, (a coffee plantation, belonging to Dr. Macfadyen, which I intended making my head-quarters for a few days) I observed some very fine trees of *Juniperus Bermudiana*, a common plant in this district. Passing over coffee plantations, I reached the bed of the Yallah's river, the water was low and easily crossed, but in the rainy season this must be impassable, its dry bed being about 300 yards in width, and covered with large loose stones. In a narrow pass grew *Ipomœa Horsfalliana*, flowering profusely, it was certainly the loveliest plant I had yet met with; I suspect its native country must have been mistaken, for it is described as indigenous to Africa. The *Mountain-pride* (*Spathelia simplex*) became abundant, and for the first time I saw it in flower, its immense panicle of lively rose-coloured flowers, rising from the palm-like stem and foliage, rank it amongst the most beautiful of plants. Two shrubby species of *Eugenia*, of which I obtained specimens, and the singular *Helicteres Jamaicensis,* with two kinds of *Melastoma,* and a few Ferns, formed the principal part of my day's collection. After traversing several coffee plantations, I reached Radnor, when I found that my over-fondness for the night breeze at Penn Hill had given me a cold; so that however pleasant it may be, particularly after leaving the plains, it is more prudent to avoid the direct influence of the night air.

8th June.—In the morning, I endeavoured to make arrangements to visit and sleep one night at the Blue Mountain Peak; but Friday and Saturday are the two market days for the negroes, so that I could get no one to accompany me before Monday, the 12th. In the mean time I made an excursion to the Portland Gap, an elevation of 6,000 feet, where I met with the most dense forests I had yet seen. *Ferns* were very abundant; *Marattia alata,* a beautiful plant, in great plenty; it does not appear to grow below this elevation. Two species of *Viburnum,* one of *Garrya,* two of *Clethra,* two shrubby *Solanums, Podocarpus coriacea* sparingly, three kinds of arborescent *Ferns, Epidendrum glaucum,* three species of *Pleurothallis,* several *Melastomaceous* plants, and some interesting shrubs, were all new to me.

On the 12th, by daybreak, I started for the Peak, taking with me three negroes, and a fourth with a mule as far as Portland Gap, which is the nearest point of ascent. We reached that place by seven o'clock, A.M., and after collecting a load of plants, principally *Ferns,* I despatched my horse and mule back. I then proceeded, but not altogether empty, two negroes carrying a full load of yams and salt fish, with some pieces of sugar-cane. These things they appear to take with them instinctively, which is perhaps a fortunate circumstance, particularly if the quantity be moderate. From this point the dense natural forest begins. *Garrya Fadyena* is here abundant; *Vaccinium meridionale* holds a conspicuous place, laden with fruit, superior in size and flavour to that of *Vaccinium Myrtillus,* the *Blaeberry* of Europe. A charming *Melastomaceous* plant, with solitary scarlet flowers, was very striking; the arborescent *Ferns* here attain a greater size than I had yet seen them, 50 to 60 feet being the common height. Three species I observed as we went up. After leaving Portland Gap, the ascent becomes very steep, over roots and dense brakes of *Gleichenia immersa*. The stems and branches of every shrub or tree are covered with various *Mosses*, hanging in the most fantastic manner, and preserving their soft luxuriance when many yards in length, until their own weight or the violent winds prostrate them, again to ascend with a vigour of growth, which the great moisture of these forests, almost constantly enveloped in clouds, accounts for.

The ascent is very steep to the first flat, where water is obtained from an excellent spring, which is about 7,000 feet above the sea. The water is pure, and cold as ice, and after drinking as much as we required, and taking a quantity with us, we began the ascent of the Peak proper. Here the *Podocarpus coriacea* (*Yacca*) constitutes entire forests, and beneath its shade *Lobelia assurgens*, flowering profusely, forms a suffruticose shrub, of 20 feet high. The ascent now is almost perpendicular, vegetation becoming more dwarfish. Towards the summit, the trees are generally only about 15 or 20 feet high, and nothing occurs that may be called timber. We reached the Peak by five o'clock, P.M. I had collected a quantity of seeds and specimens on my way up, which had a good deal impeded my progress.

The evening was fine and clear, the view truly magnificent, the whole island lying like a map at our feet. The white bed of the Yallah's River appeared beneath our feet, although sixteen miles distant, and Kingston, with its beautiful harbour, teeming with vessels, had a very pretty appearance. To the northward, east, and west, one dense and undulated forest presented itself, far as the eye could reach. The proportion of cleared land, along the north side on the coast, was a mere strip; the better cultivated mountains of Port Royal, with the numerous isolated residences, gave a considerable animation to the scene. Turning half-way round, the little sea-ports of Port Antonio, Buff Bay, Anotta Bay, &c., showed like specks in the dark woods around them. The thermometer, in the sun 50°, sunk to 46° during the night, and this in the middle of June; I have little doubt that it freezes here in the winter season.

Leaving the negroes to construct our hut, I made the most of the little daylight that remained, there being no twilight in Jamaica, for as soon as the sun disappears, it becomes dark. I obtained specimens of *Podocarpus coriacea*, *Vaccinium meridionale*, *Manettia Lygustum*, *Myrtus alpina*, a pretty upright growing shrub, and *Lobelia assurgens*. *Bambusa verticillata* renders these woods almost impenetrable. Several interesting shrubs also occurred, and a few singular *Ferns* growing on the stems of a remarkable species of *Clethra*, not in flower. This plant has large, broad, woolly, leaves, and is the largest tree at the Peak; it appears peculiar to this locality, as I did not observe it anywhere else. After securing what seeds, plants, and specimens I could, I returned at dark, and found the negroes busy roasting yams for dinner. This appeared to absorb all our thoughts for the present, our appetites being pretty well sharpened. The hut was formed of a skeleton span roof, and covered with *Yacca* branches and fronds of a *Tree-fern*, the most simply-fronded I had seen, and which appears peculiar to this district or range of mountains.

The night threatened rain, and our last bottle of porter was destroyed in attempting to take off the neck of the bottle for want of a corkscrew. This was a real misfortune, for one of the negroes had broken the calabash of water, and it was now too late to replace it. I rolled myself up in a blanket, and would have been quite comfortable, but the rain began to fall about ten o'clock, P.M., and was not long in finding its way through our new habitation. A large fire in the middle of the hut was necessary to keep us warm; the cold and rain, coupled with the groaning of the negroes from chilly damp, rendered it not an easy matter to sleep; twice I pulled them from the fire after their clothes were ignited; and morning made matters little better, for the wind blew a complete hurricane, with driving gusts of rain.

After collecting what I could of roots, specimens, seeds, &c., at eleven o'clock, A.M., we began our descent, which the rain had rendered very difficult, and many ludicrous summersaults were performed, from the slippery nature of the soil. Wild hogs are abundant in these woods, and on our reaching the spring, two started up and were soon out of sight. About two o'clock, P.M., we emerged from the cloud that enveloped the Peak, and had a tolerably easy descent to Portland Gap; where, according to my directions, two mules were waiting, to the no small delight of the negroes, as this lightened their burdens. In a ravine, near the Gap, I found a singular species of *Asplenium*, its arborescent stem about 8 feet in length; while securing plants of this, and as many things as I could conveniently take, a heavy hail-storm overtook us, rendering, on our descent, the atmosphere cool and pleasant; thermometer 60°. With several times reloading, from the state of the roads and the difficulty of collecting *Tree-ferns*, I reached Radnor at five o'clock, P.M., quite satisfied that a botanical excursion to the Peak is not so easy as I had anticipated.

After putting together my plants and specimens, I started on the 16th to Resource, a coffee plantation, belonging to J. Brooks, Esq., about ten miles distant, in St. Andrew's Mountains. Dr. Macfadyen, with his usual kindness, had given me a letter of introduction to this gentleman. On the way, I gathered a beautiful species of *Ipomœa*, with much the habit of *I. Horsfalliana*, and lively pink flowers; of this I dug up roots, which were tuberous. The greater part of this district is occupied with Coffee plantations, and overrun with *Zinnia coccinea* and *Browallia speciosa*, probably introduced. An account of the mode of rearing the coffee shrub may be interesting. Holes are prepared, and small plants selected from old plantations, of which there are always abundance, and which are set in moist weather; all the care they require being to keep them clean from weeds, and the third year they generally yield a small crop, and by the eighth year are in full bearing. At this age they have grown about 5 feet high; they are then topped, and are not allowed to get any higher, otherwise it would be difficult to gather the fruit. They are regularly pruned once a year, something in the way of currant-bushes, but that they have one stem and the branches radiated. The berries are gathered ripe, and immediately undergo the process of pulping (separating the mucilage from the seeds, which is sweet, but is considered unwholesome). This must be done before fermentation. The beans are then dried in the sun, on floorings of cement, properly drained, and after several days' turning and exposure to the sun, they are ready for grinding, to detach the inner shell as well as the silver skin. This is done in a mill, similar to that used for grinding apples for cyder in Kent. After pulping, the seed is never allowed to become wet again, as the quality is deteriorated by rain falling on it. The next process is winnowing and hand-picking it into the different qualities. An elevation of between 3,000 and 5,000 feet is considered best for coffee; above that the trees thrive well, but do not produce any fruit. It is questionable if much of the land on which coffee thrives could be applied profitably to any other purpose; I have often seen extensive fields, looking well, on little else than bare rocks, at an angle of 75 degrees. I reached Resource in the evening, and was kindly received by Mr. Brooks. He promised to accompany me the next day to the Moorce's Gap district, an elevation of about 5,500 feet. The approach to Resource is through a beautiful avenue of *Citrons*, which were laden with their golden fruit, and had a very rich appearance. I found Mr. Brooks had paid much attention to collecting plants, particularly *Ferns*, many thriving well in his well-managed garden.

17th.—I made an excursion to John Crow Ridge. Here also *Coffee* is grown nearly to the summit of the mountains, which, like the Blue Mountain Peak, are covered with a forest of *Yacca* and *Tree-ferns*. I obtained specimens of

Andromeda Jamaicensis, Vaccinium meridionale, and *Myrica Mexicana: Atropa arborea,* a singular diœcious plant, and *Viburnum villosum* were abundant, with a number of *Ferns* I had not before seen. The day was oppressively hot; in the evening I returned to Resource.

18th.—Accompanied by Mr. Brooks, we started early for Moorce's Gap, in the central range of the Blue Mountains, a distance of about seven miles, and separating St. George's from St. Andrew's parish. Ascending by a narrow pass, I observed growing on marly banks, *Lisianthus exsertus,* flowering profusely, also a species of *Rubus,* quite distinct from *R. Jamaicensis,* also common in this district; this put me much in mind of the common *Blackberry* of England, but the fruit is not so good. I gathered plants, seeds, and specimens of *Lisianthus longifolius* and *exsertus,* the latter a beautiful shrub, about 10 feet in height; three species of *Gleichenia,* with numerous *Ferns* of the families of *Trichomanes* and *Hymenophyllum,* adorn the banks and trees with their delicate fronds. On reaching the summit of the range, the vegetation suddenly changes, and is very luxuriant. Here I obtained specimens of a singular diœcious tree, which Mr. Brooks informed me bore a fruit with very much the flavour of the *Strawberry. Fragaria vesca* is now perfectly naturalized in all the higher mountains. Several species of *Lycopodium* are here common; *Lycopodium Jussieui,* a singular species, I found rare, but it was not in fructification. *Podocarpus coriacea* grew abundantly, and formed the largest trees in the woods, with several beautiful species of *Melastoma,* their stems covered with *Tillandsias,* a species of *Pothos,* and several scandent *Ferns* and *Mosses.* Two species of *arborescent Ferns* were plentiful, their foliage, particularly that of *Alsophila aspera,* very rich. As we went down on the north side, the woods became dense, and completely interwoven with *Bambusa verticillata.* Here, on moist banks, I noticed the singular *Fadyena* in plenty, an interesting *Fern,* also a pretty *Gesneria,* with delicate white flowers. *Yacca* becomes less common, and is succeeded by the *Hi-*

biscus elatus, a truly noble tree, producing its large tulip-like flowers at the extremities of its robust branches. Several showy species of *Psychotria* were common, with *Lisianthus latifolius*, of which I gathered specimens, but the seeds were not ripe. Descending towards the coast, the vegetation is rich and beautiful, the stems and branches so completely overrun with climbers, that it becomes difficult to determine which is the original tree; this is particularly the case with the *Jamaica Ivy* (*Marcgraavia umbellata*), a very singular plant, assuming two different aspects, which, unless closely examined, might be taken for two distinct plants. The stems of trees and the rocks are covered with the most delicate tapestry of *Ferns*, especially *Trichomanes trichoideum*, certainly the most delicate and beautiful of that interesting tribe. In these dense moist woods I noticed the rare *Tovaria pendula*,* a singular and interesting plant, and which has also the recommendation of a most delicious scent, and is worthy a place in every stove. One very fine individual, with about a hundred racemes of its sulphur-coloured flowers, had a very pretty appearance; I could not obtain seeds.

The birds, although of varied and beautiful plumage, are no songsters, so that no indication is given of their presence until you see them; the measured, plaintive note of the *Solitaire* in these dense woods, adds a peculiar charm; not so the mosquitos, which abound in these localities, and are very tormenting. It has been said, they only bite new comers; but this is not correct, for I believe they are more troublesome to the negroes than Europeans. After taking some refreshment by a beautiful spring of cold water, we returned, and reached Resource just before dark.

20th.—Left Resource early, Mr. Brooks kindly accompanying me, for Spring Hill, crossing another Gap, seven miles to the westward of Moorce's Gap. The vegetation of Silver Hill is similar to that of Moorce's; *Gesneria tomentosa* is very common, and two species of *Cestrum*, of which I secured specimens and seeds. The *Bread-fruit tree* is grown in this district, but the negroes do not pay any attention to its cultivation; *Yams* and *Cocoa-nuts* are considered better; though for my part I am very fond of the *Bread-fruit*. On reaching Spring Hill, we were kindly received by Mr. Fogharty, the intelligent overseer, who is much attached to botany, and possesses an excellent collection of the *Ferns* of the neighbourhood.

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* See Ic. Plant. tab. 664.

After spending two days of bad weather in this district, which is very fertile in rare *Ferns*, I started on the 23rd. of June for Fox's Gap, accompanied by Mr. Fogharty. Ascending by a narrow pass along paths which are very bad, and certainly ought not to be dignified by the title of a road, we reached Shantamee, the highest residence, and breakfasted there, and changing our mules, we proceeded and soon gained a dense wood, abounding with the larger timbers of Jamaica, *Moronobea coccinea* of immense size, the ground strewed with its coral-like petals, the stems chopped round by the negroes to obtain the gum, which they use as a substitute for wax, as also for making strengthening plaisters: *Xanthoxylon Clava Herculis*, a very peculiar looking tree, armed with numerous and formidable spines; *Trophis Americana; Psidium montanum*, with its immense marble-like stem, and *Santa Maria*(?) of prodigious size. *Marcgraavia umbellata* climbs to an immense height on its noble dependants, and produces its singular drooping umbels of flowers abundantly, exhibiting a similar effect on trees to the ivy in Europe; it is no uncommon thing to see trees destroyed by it, while it maintains its luxuriance unmolested, and much heightened by the pendant nature of its ultimate branches. Leaving our mules, we started over some rocks towards the summit of the range, where I was much struck with the *Acrostichum crinitum*, which at a short distance I took for a *Pothos;* it is very common on moist rocks in these woods, growing with *Asplenium serratum;* here also I observed a singular arborescent *fern*, with a very slender stem, growing 30 to 40 feet high. *Epidendrum fragrans, Maxillaria discolor*, several species of *Pothos, Til-*

landsia, &c., clothe the stems of the trees. *Alpinia occidentalis*, a species of *Costus* (showy), *Heliconia Bihai* and *Bambusa verticillata*, now an old friend of mine, together with numerous beautiful *Ferns*, render this district an almost impenetrable mass of living green. After several hours clambering over the rocks, we returned, and found our mules quietly grazing. On mounting, Mr. Fogharty's mule ran away down the pass, and threw him violently against a gate that stood half open; the gate being rotten, his head, on coming in contact with it, broke four spars. On going to his assistance, for he was completely stunned, I found a smart cut, about two inches long, above the left ear, bleeding fast. A little brandy was all I had to dress it with; he however soon recovered, and was able to ride my mule down. By this time it rained heavily, with thunder and lightning; on the way I was assailed by several negroes, each making a like demand for taking my horse out of the gully; having left it to rest at Shantamee. This I soon found to be correct; it had fallen, while grazing, about 40 feet, but fortunately escaped injury: such is the nature of the roads here, that if two people meet, it is only by mutual consent they can pass. We reached Shantamee about ten o'clock, P.M., well drenched with rain. On further examination, the injury Mr. Fogharty had received was happily found not to be serious.

June 25th.—With fine and clear weather I started early for Radnor, where I had left my collections from the Blue Mountain Peak; going by a different route, the only things remarkable I saw, was a showy species of *Ipomœa*, of which I got seeds; also fine specimens of *Andromeda Jamaicensis*, and *A. fasciculata*, forming thickets for several miles. These plants are not found in the higher mountains, but abound on the mountains above the Yallah's River. *Helicteres Jamaicensis*, with two species of Guava, are common. Two species of *Laurus* (*Sweet-wood*) were covered with white and fragrant flowers.

The day had been very hot and dry, therm. 85° in the shade. I reached Radnor in the evening, about 6 P.M., my horse appearing to feel the effects of his fall on the previous day.

27th.—Returned to Portland Gap for some more *tree-ferns*, one of those I had brought the day before having been dropped on the pass, and was destroyed. With some difficulty I brought down two large specimens and several small ones.

28th.—After packing up my specimens, and all the plants I could carry with me, which made a heavy burthen for my baggage mules, I left Kingston by the way of Guava Ridge. The roads were steep and narrow, and my progress therefore slow, the load touching against the rocks or trees, was constantly requiring shifting. On the banks of the Anchovy River, a tributary to the Yallah, I gathered several plants of the *white Ipomœa* I had before seen. It was mid-day before I crossed the Yallah's River, owing to my unwieldy load, and the nature of the road. On ascending from the river, I for the first time noticed the *Securidaca virgata.* This splendid twining plant had overrun everything for several yards, and was completely covered with delicate pink flowers, not unlike some species of *Polygala.* But few Orchidaceous plants grew here; *Brassia maculata* was abundant. On the rocks near Penn Hill I obtained specimens of *Aspidium glandulosum*, also a curious *Excoecaria*, and in old Coffee grounds a species of *Piper* overruns large tracts of land, forming a remarkable feature in the scenery; it is rarely met with in natural and original forests, but once fallen and neglected, it, with several other species of *Piper* and *Cecropia peltata*, appears to form a secondary vegetation. From the time the land is cleared for coffee on these rugged mountains, a process of exhaustion begins; the heavy rains and rapid rivers carrying such vast quantities of soil down annually, as render many once valuable properties, little else than an encumbrance to their owners.

On reaching the plains the vegetation presented a sterile appearance, for although I had met with plenty of rain, not a drop had fallen on the plains. In the mountains rich verdure surrounded me on all sides, alike on rocks as rich valleys; but on the level grounds not a green leaf could be seen. I reached Kingston about seven o'clock P.M., after a journey of twenty-five miles of difficult travelling. After despatching my collections on the 7th of July, I started by the coast road to Bath, but was detained longer in Port Royal Mountains than I expected, for I had quite mistaken the nature of the country. I took with me about two reams of paper, a quantity which, when full, forms quite a load for a mule.

The day was hot and bright, therm. in the shade indicating 96°. From the long continued dry weather on the coast the vegetation was completely scorched; on reaching Rock Fort, *Melocactus communis* was abundant for several miles along the coast, with three species of upright *Cerei*, two of which I believe are in cultivation.

Again I crossed the bed of the great Yallah's River, when an immense field of *Melocactus communis* once more appeared; the specimens much larger than any I had noticed before. In salt marshes farther on, I saw large forests of *Mangroves*, among them grow *Conocarpus erecta* and *racemosa*, singular trees, when in seed much resembling the European *Alder*.

While cutting down one of these trees to obtain specimens, I was seized with a violent pain in the head, followed by a voluntary bleeding from the nose, which soon relieved the pain; this was the first time I had suffered from the effects of the sun, nor had I ever felt the heat so intense. As I pursued my way eastward the vegetation became more luxuriant, from the more frequent rains. I observed a showy species of *Bunchosia*, *Cleome grandiflora*, and *Phaseolus lathyroides*; here the sugar country begins. Passing through Albion estate, I came to the first sugar cultivation I had seen, and was delighted with its lively and pleasing appearance. On reaching the salt-ponds, I found myself surrounded by groves of *Mangrove* trees, which looked handsome. There are no aquatic plants in these extensive lakes, owing to the brackish nature of the water. The peculiar habit of the *Mangrove* is to form a kind of rugged scaffolding with its singular roots, so that half the lakes may be traversed without getting wet. These localities abound with alligators, which appear to be harmless. *Anona squamosa* is abundant, forming groves. Two species of *Capparis*, shrubs of a conical form, are very conspicuous; also the sweet-scented *Pisonia aculeata*, a formidable climbing shrub; two kinds of *Psidium*, with fruit of grateful flavour; a few *Melastomas*, some gigantic *Cotton-trees*, (*Bombax Ceiba*) the latter laden with *Tillandsias* and *Broughtonia sanguinea*, and immense festoons of *Cactus triangularis*, suspended by its own roots from the giant horizontal branches of this noble cotton-tree. On some of these trees I observed fourteen species of plants growing, *Tillandsiæ*, *Orchideæ*, *Ferns*, *Rhipsalis*, and *Cacti*; the trunks are often 20 feet in diameter, and not less than 150 feet in height, and each may be said to present a botanic garden of itself. It became dark just before I reached the White Horses, (a large perpendicular rock so called) under which the road passes.

Hearing a noise behind me, I turned round, and beheld my servant and mule prostrate, which I quickly ascertained was caused by a piece of rock falling from above; it did not however appear to have directly struck either man or mule. I procured light with some lucifers, and found my servant's toe cut off by the nail, and himself a good deal frightened; the mule was cut in several places about the legs and head; after dressing the injuries as well as circumstances would permit, with a little laudanum, I proceeded, but the mule being a little lame, I myself walked to Morant Bay, the servant Edward Bryan riding my horse. The air was now become cool and pleasant, and I reached Morant Bay by ten o'clock, which was the first place I came to, (a small sea-port town, with about one thousand inhabitants) stopping all night at the only inn in the place, which was pretty good for Jamaica, this island certainly not being noted for tavern accommodation.

8th.—After settling my account, and among other items I paid a dollar for my bed, the usual charge in Jamaica, and that not of the best description, I started about six o'clock P. M. for Bath, the country becoming picturesque and the vegetation finer. Along the sea-beach grew beautiful groves of *Cocoa-nut-trees*, and beneath their shade the pretty *Ipomea Pes-capræ* was flowering profusely, and covering several acres, to the exclusion of everything else. The country became gently undulated as I approached Port Morant, and in a tolerable state of cultivation, partly as sugar and grazing properties. On the sandy beach of Port Morant grew *Lisianthus glaucifolius*, a pretty species, with blue flowers; securing seeds and specimens of it, I proceeded, and passing a well wooded district, principally settled by negroes, reached the plantation called Garden River.

Two species of *Indigofera* are abundant along the bed of the river; I believe when indigo was raised in Jamaica, its culture was not confined to one particular species. The scenery was very rich as I approached Bath. This pretty village is situated on the left bank of the river; the great range of mountains to the north rise to the height of 5000 feet, and surrounded by rich vegetation on all sides. Bath is composed chiefly of detached residences of light and airy structure; along the principal street is planted a charming avenue of *Eugenia Malayensis*, (*Malay Apple*) alternate with *Areca oleracea*, (*Cabbage-Palm*) the fine conical outline of the former, covered by its dense and luxuriant foliage, and laden with purple fruit, contrasting with the noble and elegant contour of the latter, gave the place a very pleasing and delightful appearance.

On reaching the botanic garden, I was kindly received by the Rev. Thomas Wharton, who, in addition to the parochial charge, also superintends the botanic garden, which presents many noble and striking specimens, principally introduced plants; among others I observed *Lagerstræmia Reginæ*, a noble tree, now in a complete blaze with flowers of the most delicate pink; *Adansonia digitata*, a splendid tree, producing its singular flowers sparingly, Mr. Wharton informs me it has never borne fruit; *Cookia punctata*, laden with clusters of fruit, of a pleasant subacid flavour; also some large specimens of the *Bread-fruit*, which thrives better here than anywhere I have seen it, and which, besides its utility, is a highly ornamental tree; it produces fruit so abundantly, that pigs and poultry are fed on it, with the best results; also *Artocarpus nucifera*, a singular tree, of a similar habit to the other, the fruit somewhat smaller and echinate, but containing seeds about the size of a Spanish-nut, regularly distributed through the fruit and separated by a stringy pulp, not edible. Each fruit contains about twenty seeds; and these, when roasted, are much esteemed as an article for dessert. It was introduced to Jamaica from the Island of Timor. A fine specimen of *Inocarpus edulis* (*Otaheite Chestnut*); *Hedysarum vespertionalis* is a perfect weed; *Holmskioldia sanguinea*, a pretty shrub; this was in full flower. Some fine trees of *Achras Sapotilla*, a fruit deservedly esteemed. *Terminalia Catappa*, a large timber tree. *Sterculia acuminata*, a noble foliaged plant, bearing a singular capsule, containing several large nuts (seeds) curiously packed together; and, I believe, eatable. A singular species of *Musa*, from Otaheite, with an immense cluster of orange-coloured fruits, which is erect (not as in most other species pendulous); several other varieties of *Musa*, already in our stoves; *Musa coccinea*, flowering freely; *Heliconia Bihai* and *Braziliensis;* a fine specimen of *Murraya exotica* delightfully fragrant and covered with delicate citron-like flowers; several very large plants of *Uvaria odorata*, fragrant and beautiful; its general aspect not unlike the *Lime tree* of Europe. *Adenanthera pavonina*, a large *Acacia*-like tree, sparkling with its scarlet coral seeds. Several fine specimens of *Elais Guineensis* (*Palm-oil tree*) a robust and noble palm; the oil is extracted by the negroes by bruising the whole fruit in a mortar, and afterwards boiling it, when the oil is obtained. Trees of *Areca oleracea* are planted at regular intervals round the garden, and form the boundary line. The top of this palm, or young enclosed leaves, is the part eaten, and certainly constitutes an excellent vegetable. Of *Areca Catechu*, there are several fine plants, (this is the *Betel-nut* of Commerce) an elegant palm about 50 feet high, crowned with rich foliage, beneath which it produces large clusters of orange-coloured fruit. Some large specimens of *Artocarpus integrifolia*; the stems and branches full of its large and singular fruit, a necessary provision of nature, as its slender twigs could never bear the weight. Several fine trees of *Laurus Camphora* and *L. Cassia*. The most striking plant I saw was *Pandanus spiralis*, which is both singular and beautiful. *Gloriosa superba* is perfectly naturalized and flowering profusely. Several fine specimens of *Garcinia*, and a *Correa*, of compact and elegant habit, fruiting abundantly. The fruits are of an agreeable acid flavour, the pulp surrounding the seeds is the edible part, enclosed in a pericarp of a violet colour, about the size of a pigeon's egg. *Theobroma Cacao* is a remarkable and prolific shrub, covered with fruit, which was once an article of export; but from some cause has been many years abandoned. I was surprised to see *Roses* thrive so well. Mr. Wharton has imported about twenty varieties of *China* and *Noisette* kinds. The Provins roses do not succeed.

The scanty aid at present given by the Hon. House of Assembly in Jamaica, is quite inadequate to keep the gardens in good order; but I have no doubt, from what Mr. Wharton has already effected, a more liberal support will eventually be granted. That gentleman is nursing a select collection of useful and ornamental plants, which he has lately imported.

Monday, 10th July. The morning was close and hot; thermometer 85 and 90_0 at 8 o'clock A.M. Accompanied by Mr. Wharton, we started after breakfast to the Plantain Garden River district, but I was obliged to leave my servant at Bath, he not having recovered from his fall. This is the best cultivated land I have seen, the soil a deep rich loam, and watered by the Plantain Garden River, a very appropriate name. The stream is bounded by noble groves of this useful plant, the fruits of which are roasted green as a substitute for bread; several varieties are raised. *Costus Arabicus* is plentiful along the banks, with *Pancratium speciosum. Cyperus elegans,* and some smaller *Cyperaceæ*, appear to occupy the place of *Carex* in the ditches and wet places in Europe. This lovely valley put me much in mind of the Carse of Gowrie. It is bounded on both sides by hills of no great elevation, and which are clad with forest, abounding, among other trees, with the *Cabbage-Bark* (*Andira inermis*) covered with its delicate rose-coloured flowers. This is an esteemed timber and is certainly a showy tree. On approaching Wheelersfield Estate, the rain fell in torrents; but we were very kindly received by Mr. Blunt, the intelligent overseer of this desirable property, where the rearing of the *Sugar Cane* is carried on, in the utmost perfection. The process of sugar-making is interesting and simple; the canes are planted in rows about four feet asunder; the ground turned up by the plough, in a way similar to the European mode of preparing land for turneps or potatoes; about a foot of the top of the cane is selected and laid in the furrows at regular intervals, and covered with the plough. This is, I believe, an improvement upon the original system of digging cane-holes by manual labour. The canes are fit to cut in about nine months, they are then cut by the hand and passed through rollers, propelled by a water-wheel, or by cattle, to express the juice, which is conveyed to the boilers by means of a leaden trough, and boiled as soon as expressed, with the addition of a little lime. The boiling-house is a well ventilated building, with a row of coppers, where the liquor is passed from one to another, until it begins to granulate, when it is run into coolers, and when about half cold is put into hogsheads for exportation. The molasses are drained off by means of a few of the foot-stalks of the *Plantain*: a mixture of molasses and water, allowed to ferment a short time, is distilled into rum. The fires are made of the refuse canes after they have gone through the mill, and are generally sufficient fuel, so that everything is made available.

Tuesday, 11th. The morning being fine and pleasant, we started early for Qua Hill, the left boundary of the valley, sloping gradually to the sea. *Phaseolus lathyroides* and several species of *Sida* were common along the margins of the cane-fields. Above the cultivated district a partially cleared wood commences, where among rocks, *Hamelia patens*, an elegant shrub was flowering profusely, laden with orange flowers and purple berries. I gathered specimens and seeds of it, also of a pretty half trailing shrub, which I took for a species of *Knoxia*. The scattered woods here are composed of *Mahogany*, two sorts of *Ficus*, some kinds of *Piper* and *Andiara inermis*. The seeds of a species of *Ficus* being deposited by birds, vegetate in the branches of the immense *Cotton-trees*, and soon sending down roots to the ground, the parasite ultimately envelopes their gigantic stems and completely destroys them. The appearance of this phenomenon is highly peculiar, for the large areoles between the folds of the roots of the *Ficus*, show that all within is emptiness; so that one of these immense trees forms a shell over the now decayed trunk of the once noble *Cotton-tree* (*Bombax Ceiba*) and receives the familiar appellation in Jamaica of "The Creole in the embrace of the Scotchman." I also obtained specimens and seeds of two showy kinds of *Psychotria*. *Broughtonia sanguinea* abounds in this district, and I gathered several large tufts of it. I also observed *Tradescantia discolor* on rocks; and only two species of *Adiantum*, the climate being too hot and dry for the growth of *Ferns*.

When we had climbed the hill about 300 feet above the sea, the whole vale of Plantain Garden River lay stretched beneath us; the rich cane fields, with the buildings of the different estates and accompanying Negro Village, almost hidden in groves of *Cabbage-Palms* and *Cocoa-nut trees*, affording scenery, more varied and lovely than I had ever before seen. The promontory on each side of the vale, and stretching further into the sea than the vale, forms Holland

Bay, with its little village, hidden in an immense grove of *Cocoa-nut trees*, I am told the largest in the Island, which forms a belt round the Bay a quarter of a mile wide and about three miles in length. In my way down to the sea I found *Solanum crassifolium*, with several curious maritime shrubs, on rocks which are of coral formation and are exceedingly sharp, rendering walking somewhat difficult. *Nymphæa blanda* grew abundantly in the Lagoons, which are not extensive, producing its chaste white flowers, which, although small, are conspicuous. The Lagoons abound with Alligators, which are not, however, very troublesome to the inhabitants. A poor man had, two days previously, accidentally fallen in, and was found with an Alligator floating above him, and partly devoured. They are very dull and sleepy-looking animals, and, I believe, were never known to attack a living person. The coast is here rocky; the sea running high, with a strong breeze from the East, rendered the air cool and pleasant. Two species of *Ipomæa* were showy, growing in the sand, and I secured seeds of them. As evening approached we returned to Wheelersfield, and found a draught of *Cocoa-nut* water, with a little brandy added, a very grateful beverage.

Wednesday, 12th.—The morning was dull and cool, thermometer 76°. After an early breakfast, we started for John Crow Hill, about five miles distant, riding part of the way to the junction of the wood with the cultivated land; we then left our horses, and took our way up the hill, through a dense wood, where *Oncidium altissimum* was abundant, bearing wreaths of flowers ten feet long, also *O. triquetrum*, blossoming sparingly; *Andiara inermis* holding a conspicuous place in these woods; a large tree of *Xanthoxylon Clava-Herculis*, with its horrid-looking stem, and full of seeds, induced me to undergo considerable labour in order to cut it down; I however procured abundance of seeds. Here, for the first time, I noticed *Anona montana* and its curious echinate fruit, of which I obtained seeds. *Malpighia urens*, a pretty shrub, was plentiful, laden with scarlet fruit. While gathering specimens, I became acquainted with the species, though not before I felt the effects of its irritating spines, which are curiously concealed at the back of the leaf.

Our guide, not liking to take the trouble and fatigue of going to the top of the Ridge, as we had been directed, after he got into the wood led us just wherever he pleased; for so dense were the trees, that we had no power to dictate; but certain it was, we never reached the summit. I, however found means of rewarding him accordingly; these negroes will sacrifice any thing for their own present ease and comfort. Black and yellow *Snakes* abound in the woods to an incredible degree, but generally make their escape as fast as possible; *Lizards* are also numerous, and I witnessed a deadly contest between a black snake and a large lizard; the latter endeavouring to elude me, was caught in a very dexterous manner by a large black snake, so completely enveloping it in its folds, that escape was impossible. I, however, released it, and allowed them both to get away, but not before the snake had wounded the lizard severely, which was done in a moment. The large *Tillandsias* afforded us some excellent water, and I gathered eight species of *Ferns* I had not before seen. The rain setting in, we returned, getting well soaked before we reached Wheelersfield.

Thursday, 13th.—Having caught a slight cold yesterday, I did not feel very well, but my arrangements being completed to visit Morant's Point, an extensive plain at the eastern extremity of the island, I set off. At Holland Bay I found *Anona palustris* (*Alligator apple*) in great profusion, covered with tempting golden fruits, of which it is stated that alligators are fond, as well as pigs, but this is the only use made of them by the negroes; the wood is an excellent substitute for corks. *Solanum crassifolium*, *Malpighia urens*, a species of *Wrightia*, two of *Hibiscus*, and forests of *Coccoloba uviferum*, compose the chief part of the vegetation of the coast. *Typha latifolia* and *Nymphæa blanda* were the only aquatics I saw in the Lagoons, which are traversed by large masses of the *Mangrove* (*Rhizophora Mangle*). After leaving

Holland Bay, an extensive sandy plain begins, covered for several miles with a beautiful forest of *Thrinax parviflora*, to the exclusion of every thing else. I here observed a few scattered plants of *Canella alba* (the *Jamaica Cinnamon*), a pretty shrub, which bears lively rose-coloured flowers. A small pond afforded me *Menyanthes Indica*, a pretty little aquatic, with delicate, white, imbricated flowers, produced at the extremity of the leaf-stalk. After traversing for about two miles a forest of *Palms*, 20 to 30 feet high, we reached the light-house. I was told that twenty acres of *Palms* had been cut down for its erection, but not a vestige of vegetation at present remains in its immediate vicinity. The light-house, a lofty and elegant building of its kind, commands a beautiful view of the coast for many miles, with the high mountains of the interior scarcely perceptible through a dense blue mist. The charming grove of *Palms* which we had crossed, stretches for several miles in every direction, growing down to the very water's edge, their waving fan-like foliage and slender stems giving them a peculiarly graceful and pleasing aspect. The heat was intense, thermometer 96° in the shade, and the mosquitos and sand-flies flew about in myriads. It would be difficult to say which is the most tormenting of these insect-plagues. I felt very unwell, and was aware, from having no sensible perspiration, which is a certain indication of the presence of fever, that I was threatened with illness. It was not, however, till I had gathered specimens and plants of every thing to be had, that I returned, having some time exhausted the patience of my friends, Mr. Blunt and Mr. Scott, of Dukinfield, who had accompanied me, and who were urgent on me to go back without further delay.

On approaching Holland Bay, I observed a large tract of forest, which had been destroyed in the great storm of 1815. The sea had then made an inroad, and afterwards receded, leaving a dead forest behind, which exhibits a most singular appearance, not unlike an immense fleet in harbour. It covers probably five hundred acres, with not a particle of vegetable life remaining; but is, however, not altogether useless, for *Land Crabs* abound, the whole space being perforated by them, and at every step you advance, thousands of these reptiles disappear; they are sought after by the negroes with torches, in the night, and are then, I believe, easily caught. They are sold in the markets, and many persons are very fond of them.

It was now three o'clock, P.M., and not a drop of water could be got during the whole day. I reached a negro's hut, suffering a good deal from thirst, and drank some brackish water from the Lagoons, which was all he could give, and by no means palatable. Feeling very languid and feverish, I rode on to Wheelersfield, and there took about twelve grains of calomel, by the Rev. Thos. Wharton's advice, for every one is, to a certain extent, his own doctor in Jamaica. The next day I returned to Bath, where I was confined to bed till Tuesday, the 18th. During that time, I was conscious of two smart shocks of an earthquake.

Wednesday, 19th.—On examination I found, to my regret, the greater part of my plants destroyed, from want of attention during my week's illness. These injured specimens I ejected summarily, for it is folly to attempt redeeming such as have once been neglected; in a moist climate like this, specimens require changing every day, at least, and this is my established rule. Although somewhat weak, I was able to walk with considerable ease, and to ride still better; so, after breakfast we set out to the Cuna Cuna Range, kindly accompanied by Mr. Wharton, following the river by a narrow pass, overrun with lofty *Bamboos,* which in their turn are overrun with the handsome *Pelican flower* (*Aristolochia grandiflora*) producing its large and showy blossoms profusely. Extensive groves of *Mangoes* came next in the cultivated district, which is chiefly laid out in *Coffee* and provision-grounds. A few miles of gentle ascent brought us to a noble and extensive natural forest, containing many grand *Mahogany* trees, with the various timbers of Jamaica, among which *Achroma Lagopus* was conspicuous; *Clethra* *arborea* is also abundant; this showy tree is called *Bloodwood,* from the high colour of its timber, which, for household purposes, is much esteemed; it is a moderately-sized tree. When a glimpse can be obtained of the romantic scenery around, which is not often, the whole forest is seen to be completely interwoven with climbers, principally *Convolvuli,* of no great beauty, and *Mimosa scandens,* presenting an heterogeneous mass of vegetation, of the most luxuriant description.

On reaching the Cuna Cuna Gap, at an elevation of about 4,000 feet, we enjoyed the luxury of a refreshing breeze and as much space as we could turn comfortably round upon. We then took some refreshment and a short rest, two very necessary things in the climate of Jamaica, and commenced our descent on the north side, which is about as steep as the ascent from Bath. Here I found *Acrostichum crinitum* growing on the trunks of large trees, in a fine state of fructification, with several other individuals of the same genus. I also obtained seeds of *Alpinia occidentalis;* birds, particularly the Dove tribe, are very fond of its pungent seeds; we had seen three species of Dove, one with beautiful plumage, and known in Jamaica as the *Mountain Witch.* The shrill and beautiful note of the *Solitaire* accompanied us the most of the day on our progress to Rio Grande, whose distant hollow roar we heard several miles before reaching it. I found several charming *Ferns* I had not before seen, the singular *Aspidium proliferum* and *rhizophyllum* being particularly abundant on moist banks, accompanied by several curious species of *Trichomanes;* I also noticed, growing parasitically on the roots of trees, the curious *Balanophora Jamaicensis,* called by the negroes *John Crow's Nose,* by no means an inapt comparison. This plant is very common in moist woods, springing up in a similar way to some species of *Fungus,* but being of a brilliant scarlet colour, it imparts a lively appearance to the dark brown roots and decayed leaves, among which it delights to grow. Springs of water of delicious coolness cross the pass at almost every yard. On reaching the Rio Grande, a considerable stream, the *Thatch-palm* constitutes the chief part of the vegetation for several miles along its banks. This river dashes onward over the rocks with sportive violence, and Mr. Wharton informed me abounds with excellent fish. On the margins of this picturesque river, and about seven miles from Port Antonio, is an emigrant settlement, a rich and extensive flat of naturally excellent land, but now a complete wilderness. A few years ago, forty-five emigrants were located here, principally Scotch, there are now only four remaining, all the others having died of fever or similar causes. It was a sorrowful spectacle to see the emigrant houses falling to ruin, and this once richly cultivated plain wildly overrun with several species of unproductive *Melastoma*, and two of *Psidium* (*Guava*). We again crossed the river, for the third time, and reached Golden Vale Estate, and were kindly accommodated for the night by Wm. Pine, Esq., the lessee. I felt myself all the better for the journey.

Thursday, 20th July.—Early in the morning I started, following the bed of the river, through an open and well cultivated country. I was surprised to see the *Tree-ferns* on the banks of the Rio Grande, growing not more than a mile from the sea, nor upwards of 300 feet elevation. Passing through Maroon Town, which is an interesting and extensive settlement, with hills surrounding it in the form of an amphitheatre, I was delighted with the neatness of the cottages and gardens, which surpassed anything I had witnessed in Jamaica; the spacious village church, placed in the centre on a commanding spot, gave the place an additional charm. The inhabitants subsist chiefly by hunting wild hogs, and raising provisions for market. We reached Port Antonio about mid-day, a neat and thriving town, with a beautiful harbour. After getting my horse shod, we proceeded by the coast through a little lagoon country, which, from the dry weather, was nearly dried up. A singular species of *Lobelia* was common along the coast, of which I got seeds and specimens; two species of *Croton*, and one of *Lantana*. *Jatropha gossypifolia* was abundant, affording food for the *Ground-Dove*, a pretty little bird, found in great numbers on the coast everywhere. On reaching the Turtle-Crawl, a picturesque arm of the sea, and a famous resort for turtle, I saw for the first time, growing luxuriantly in an extensive morass through which the road passed, the *Anchovy-pear* (*Grias cauliflora*), a singular tree, laden with fruits, which are sessile on the stem, and immense foliage. Near the coast, the vegetation is in general stunted, and the land for the most part employed for grazing-farms, called penns in Jamaica. On reaching the Blue Hole, a place celebrated as the spot chosen by the negroes in a former rebellion to obstruct the progress of cavalry troops, and precipitate them into this fathomless depth, I found it forming a circle of about four acres, connected with the sea by a narrow passage. The colour of the water is a beautiful blue. The road at the top comes in a right angle, with a perpendicular precipice of 200 feet, to the water. On rocks, above this remarkable place, I found a singular new *Lisianthus*, making five species of this fine genus which I have met with in Jamaica.

(*To be continued*).

MUSCI ANTARCTICI; *being Characters with brief descriptions of the new species of* MOSSES *discovered during the voyage of H.M. Discovery Ships,* EREBUS *and* TERROR, *in the* SOUTHERN CIRCUMPOLAR REGIONS, *together with those of* TASMANIA *and* NEW ZEALAND. *By* DR. J. D. HOOKER *and* W. WILSON, ESQ., *of Warrington.*

The exertions of the late Mr. Menzies during Vancouver's voyage, brought to light so many new and interesting species of Cryptogamic Plants from the southern extreme of the American Continent, and from the New Zealand Islands in the opposite hemisphere, that the attention of Botanists has always been directed to these countries as probably affording a richer harvest, especially of *Mosses* and *Jungermanniæ*, than any other part of the world. Before leaving England, when paying my farewell visit to that lamented and then venerable naturalist, he particularly advised me, should our expedition touch at his favourite botanical ground, Dusky Bay, New Zealand, or any adjacent port, that I should diligently search for such plants, and requested me to send him at once a few specimens, adding that no collector had visited that spot since himself, then nearly half a century ago, and that if I did not re-discover some of his favourites, he was too near his ninetieth year to expect to receive them from any one else. Unfortuately, it was out of our Commander's power to visit Dusky Bay; but during the stay of our ships at Lord Auckland's Islands, four degrees farther south, and in the Bay of Islands, ten degrees to the northward of where Mr. Menzies had collected, most of his species were found. A few specimens were sent at different times, in the hopes that the admirable health in which I had left him might have been continued, through Providence, until those of *Hypnum Menziesii* amongst others, should have reached him. It was, however, ordered otherwise; and the, to me, peculiarly melancholy account of his decease found our expedition at the Falkland Islands, on our return from Tierra del Fuego, where I had been again endeavouring, "*longo post intervallo*," to follow his footsteps.

Some idea may be formed of the amount of *Cryptogamia* with which these regions teem, from the Monograph of some of my *Jungermanniæ*, already printed in this work. I am indebted to the great experience of Dr. Taylor for the discrimination of several of the species therein described which had escaped my observation, the amount of which, I must confess, far exceeded my first calculations. Again, those who know the difficulty of monographing collections made in a short space of time, in the present instance during three weeks only in Lord Auckland's group, where seventy-two species were collected, will understand how very careful an examination it requires to distinguish what really are species, and the frequent necessity thus imposed on the botanist of describing as two what a more copious suite of specimens may prove to belong to one.

The Muscological Herbarium of Sir W. Hooker is now under the hands of Mr. Wilson, of Warrington, whose knowledge of that tribe is the most extensive, as he is himself the most accurate of muscologists. That my own *Mosses* may be the more perfectly determined, I have, at his kind request, confided the whole collection, together with the MS. descriptions, and drawings of the species, to his able charge, both for his assistance in the elucidation of the new species and a comparison with those in the Hookerian Herbarium; and I shall here give a part of the results of our labours in the following form.

1. ANDRÆA, *Ehrh.*

1. A. *nitida*, n. sp.; caulibus suberectis laxe cæspitosis parce ramosis, foliis erecto-patentibus ovato-oblongis obtuse apiculatis concavis enerviis nitidis, marginibus reflexis perichætialibus paulo longioribus erectis.

HAB. Lord Auckland's group.

2. A. *marginata*, n. sp.; caulibus laxe cæspitosis subramosis, foliis erecto-patentibus incurvis ovatis longe acuminatis infra medium contractis enerviis marginibus inferne pallidis caulinis majoribus laxis superioribus confertis, perichætialibus longioribus elongatis late lanceolatis convolutis, theca exserta.

HAB. Hermite Island, Cape Horn.

3. A. *acutifolia*, n. sp.; caulibus fastigiatim ramosis, ramis apice ramulosis, foliis erecto-patentibus incurvis rigidis lanceolato-subulatis acutis vel ovatis longe acuminatis concaviusculis enerviis basi gibbosis siccitate erectis, perichætialibus longioribus lanceolatis convolutis, theca subexserta.

HAB. Hermite Island, Cape Horn; Falklands; Lord Auckland's and Campbell's Islands.

4. A. *mutabilis,* n. sp.; caulibus cæspitosis ramosis elongatis gracillimis, foliis confertis laxioribusve erecto-patentibus rarius falcato-secundis lanceolatis v. ovato-lanceolatis concaviusculis enerviis siccitate appressis, theca—?

var. α. microphylla; foliis ovato-lanceolatis minutissimis.

HAB. Lord Auckland's group, and Campbell's Island.

var. β. subsecunda; foliis laxioribus inferioribus secundis superioribus ut in *var. α.*

HAB. Falkland Islands.

var. γ. uncinata; foliis dissitis falcato-secundis.

HAB. Falkland Islands.

5. A. *laxifolia,* n. sp.; caulibus laxe cæspitosis parce ramosis foliis lanceolato-subulatis obtusiusculis concavis enerviis ramulinis falcato-secundis caulinis erectis subsecundis laxe imbricatis, perichætialibus elongatis ovato-lanceolatis convolutis, theca exserta ovato-oblonga.

var. β. minor; theca subexserta.

HAB. Hermite Island, Cape Horn.

6. A. *subulata,* Harvey in Hook. Ic. Plant. t. 201.

var. β. rigida; foliis minus falcatis crassioribus luridis.

HAB. Hermite Island, Cape Horn; Falkland Islands.

var. γ. perichætialis; theca foliis perichætialibus minoribus immersa.

HAB. Lord Auckland's and Campbell's Islands.

Subgenus ACROSCHISMA, *Hook. fil. et Wils.*

Theca cylindrica, e basi ad medium et ultra indehiscens, apicem versus tantum in valvulis 4 *vel* 8 *fissa;*—an genus proprium?

7. A. (Acroschisma) *Wilsoni,* Hook. fil.

HAB. Hermite Island, Cape Horn.

For the better illustration of this difficult genus, Mr. Wilson has furnished me with a tabular view of all the known species.—(J. D. H.)

Conspectus of the known species of ANDRÆA, *by W. Wilson, Esq.*

1. Theca fere ad basin valvulis quatuor dehiscens.
1. (ANDRÆA *auct.*)

A. FOLIA ENERVIA.

a. folia ovato-oblonga, obtusa, margine reflexo.
1. A. *nitida*, v. supra.

b. folia e basi erecta amplexicaulia patenti-incurva;

— obovata, acumine brevi, perichætialia longiora, convoluta. 2. A. *alpina*, Hedw.

— ex ovata basi longe acuminata submarginata.
3. A. *marginata* (v. supra).

— ovato-lanceolata, acuminata, basi gibbosa, perichætialia sublongiora, vix convoluta.
4. A. *acutifolia* (v. supra).

— ovata, acuminata, obtusiuscula, apice subobliqua (papillosa). 5. A. *rupestris*, Hedw.
(variat foliis nunc secundis nunc undique versatis).

c. folia suberecta, subsecunda, basi non amplexicaulia.

— ovato-lanceolata, acuta, papillosa, (perichætialia similia ? sublongiora). 6. A. *mutabilis* (v. supra).
(variat foliis nunc falcatis laxis, nunc confertioribus minoribus subsecundis supremis erectis).

— laxa lanceolata, basi attenuata, obtusiuscula, marginibus inflexis; perichætialia longiora, convoluta.
7. A. *laxifolia* (v. supra).

B. FOLIA NERVATA.

— folia lanceolata acuta (secunda) nervo tenui, perichætium subnullum. 8. A. *nivalis*, Hook.

— folia lanceolata acuta (secunda) confertiora, magis falcata, perichætialia elongata, convoluta.
9. A. *Grimsulana*, Bruch.
(Obs.—This is now called by Bruch A. *Rothii*, var. *alpina* to me it appears to be rather a var. of A. *nivalis*, with which it agrees very closely in

the structure of the cauline leaves, though the habit is that of A. *Rothii*).

— folia lanceolata-subulata, falcato-secunda, obtusiuscula, nervo validiore, perichætialia longiora, convoluta, (intima enervia). 10. A. *Rothii*, Mohr.

— folia lanceolato-subulata, falcato-secunda, obtusiuscula, nervo crasso, latiori. 11. A. *crassinervia*, Bruch.
(This, though retained by Bruch as a species, appears to have less claim to that distinction than A. *Grimsulana*).

— folia lineari-subulata (longissima) falcato-secunda, nervo crasso excurrente, vel totam angustiorem folii partem replente. 12. A. *subulata*, Harvey.
[variat foliis minus falcatis, perichætio subnullo ; A. *perichætialis*, Hook. fil.]

2. Theca cylindrica, e basi ad medium et ultra indehiscens, apicem versus tantum in valvulis 4 vel 8 fissa.
2. (ACROSCHISMA, *Hook. fil. et Wils.*)
1. A. *Wilsoni*, Hook. fil.

2. GYMNOSTOMUM, *Hedw.*

8. GYMNOSTOMUM (Eucladon) *complanatum*, nov. sp.; surculis erectis fasciculatis complanatis, foliis trifariis lateralibus patentibus verticalibus elliptico-lanceolatis acutiusculis integris nervo subcontinuo, dorsalibus erectis apice recurvis subrotundis apiculatis nervo subcontinuo, perichætialibus longioribus erectis linearibus, theca erecta elliptico-oblonga ore angustato-annulato, operculo longirostrato, calyptra dimidiata.

HAB. New Zealand. On the stem of a tree-fern, growing with *Rhizogonium piliferum*, nobis.

This curious Moss will probably form the type of a new genus, analogous to *Hypopterygium* of Bridel, for which we propose the above name of *Eucladon*. We have not seen any mature capsules, but in those which clearly show the annulus, we find no trace of peristome. In habit it is allied to *Tetraphis* and *Schistostega*. Inflorescence dioicous and terminal.

3. SCHISTIDIUM, *Brid.*

9. SCHISTIDIUM *marginatum*, nov. sp.; caule erecto, foliis erecto-patentibus lanceolatis subapiculatis marginatis solidinerviis subdenticulatis, theca immersa subrotunda, operculo conico-rostrato erecto.

HAB. Kerguelen's Island.

Very different from any described species.

4. POLYTRICHUM, *L.*

10. POLYTRICHUM *compressum*, nov. sp.; caule subsimplici, foliis erecto-patentibus lanceolato-subulatis concavis carnosis subserratis, theca inclinata ovata compressa microstoma, operculo conico-rostrato, calyptra apice subpilosa.

HAB. Hermite Island, Cape Horn.

Allied to P. *lævigatum*, Hook., but differs in the compressed capsule and narrower leaves.

11. POLYTRICHUM *squamosum*, nov. sp.; caule elongato squamoso superne fastigiatim ramoso, ramis patentibus brevibus densis curvatis, foliis dense imbricatis suberectis lanceolato-subulatis strictis serratis.

HAB. Hermite Island. Possibly an alpine barren state of P. *dendroides*, but very different in aspect.

5. SPLACHNUM, *L.*

12. SPLACHNUM *purpurascens*, nov. sp.; caule elongato, foliis patentibus obovato-acuminatis apice recurvis integerrimis undulatis evanidinerviis, theca ovoideo-oblonga superne angustata, apophysi obconica capsula angustiore, operculo conico.

HAB. Lord Auckland's group, and Campbell's Island.

Allied to S. *Octoblepharum;* but larger, with leaves wider, less produced at the apex, and more crisped when dry; capsule narrower, and more tapering below.

6. GRIMMIA, *Hedw.*

13. GRIMMIA *falcata*, nov. sp.; caule laxe cæspitoso ramoso

pendulo, foliis falcato-secundis lanceolato-subulatis crassinerviis canaliculatis integerrimis, theca immersa subsessili turbinata, operculo rostellato.

HAB. Kerguelen's Island.

Allied to G. *rivularis*, but very distinct in its falcate leaves, which have a broad, thick, excurrent nerve.

14. GRIMMIA *tortuosa*, nov. sp.; caule pulvinato, foliis erecto-patentibus lineari-lanceolatis acuminatis piliferis siccitate tortuosis, theca subsessili urceolata, operculo convexo umbonato.

HAB. Falkland Islands.

Allied to G. *apocarpa*, but the leaves much longer and narrower, crisped and tortuous when dry, the margin plane.

7. WEISSIA, *Hedw.*

15. WEISSIA *contecta*, nov. sp.; caule ramoso fastigiato, foliis erectis strictis lanceolato-setaceis integerrimis solidinerviis, seta perbrevi, theca foliis immersa turbinata, operculo rostrato.

HAB. Campbell's Island. Unlike any described *Weissia*; allied to *Dicranum filiforme*, Schwaegr., but has the teeth of the peristome entire.

16. WEISSIA *stricta*, nov. sp.; caule ramoso, foliis subfalcatis lanceolato-setaceis rigidis canaliculatis integerrimis crassinerviis nervo longe excurrente, theca subrotunda, operculo rostrato.

HAB. Kerguelen's Island.

Unlike any described species.

17. WEISSIA *tortifolia*, nov. sp.; caule ramoso, foliis patentibus flexuosis siccitate crispatis lineari-subulatis canaliculatis integerrimis nervo excurrente, perichætialibus brevioribus convolutis, seta brevi, theca subrotunda, operculo rostrato.

HAB. Kerguelen's Island.

Closely allied to W. *stricta*, but differing in its crisped widely spreading leaves, which are only half as long.

8. Dicranum, *Hedw.*

18. **Dicranum** *Menziesii*, nov. sp.; caule subramoso, foliis secundis setaceis basi lanceolatis rigidiusculis apice serrulatis strictis, nervo latiusculo valido subexcurrente, seta brevi, theca foliis subimmersa elliptico-oblonga basi strumulosa, operculo longirostrato.

Hab. Lord Auckland's group, barren.

Described from specimens gathered in New Zealand by Menzies. Resembles D. *fasciatum*, Hedw., but has longer, more setaceous nerved leaves, solitary seta, and an oblong capsule.

19. **Dicranum** *pungens*, nov. sp.; caule elongato subramoso, foliis patentibus secundis lineari-lanceolatis attenuatis convolutis apice carinatis serratis tenuinerviis: perichætialibus longissimis convolutis, seta mediocri tortili, theca oblonga inclinata curvula, operculo longirostro.

Hab. Lord Auckland's group.

Resembles D. *Blumii*, but is somewhat smaller, and with a different capsule. Distinct from D. *Billardieri*, Schwaegr. in the longer and narrower leaves, and smaller capsule.

20. **Dicranum** *setosum*, nov. sp.; caule fragili subramoso, foliis erecto-patentibus strictis longissimis lanceolato-setaceis fragilibus apice serrulatis nervo latiusculo subexcurrente, seta longiuscula, theca oblonga curvata, operculo longirostrato.

Hab. Lord Auckland's group, and Campbell's Island.

Allied to D. *capillaceum*, Bridel, which differs in having a striated capsule, and to D. *longisetum*, Hook., which has a broader indistinct nerve, and straight erect capsule.

21. **Dicranum** *aciphyllum*, nov. sp.; caule ramoso, foliis erecto-patentibus strictis rigidis lineari-lanceolatis integerrimis canaliculatis nervo latissimo continuo, theca subcylindrica erecta, peristomii dentibus angustis subintegris, operculo longirostrato.

Hab. Hermite Island, Cape Horn, and Falkland Islands.

Allied to D. *longisetum*, Hook., but the leaves longer and

wider, more rigid, less setaceous above and quite entire, the nerve broader, capsule longer, and the teeth of the peristome smaller, and scarcely bifid except at the apex.

22. **Dicranum** *robustum*, nov. sp.; caule elongato subramoso, foliis falcato-secundis longissimis lineari-lanceolatis setaceo-attenuatis convolutis spinuloso- serrulatis, nervo latiusculo excurrente, perichætialibus intimis obtusis mucronulatis enerviis convolutis, theca cylindrica inclinata curvula strumulosa, operculo longirostrato.

Hab. Hermite Island.

A larger species than D. *pungens*, differing in the longer more distinctly serrated leaves, with broader excurrent nerve, and the perichætial leaves much shorter, capsule longer and strumose, teeth of peristome larger. It resembles D. *majus*, Turner, in general appearance, but has much longer leaves.

23. **Dicranum** *tenuifolium*, nov. sp.; caule ramoso, foliis circinnato-falcatis e basi lanceolata longissime capillaceis integerrimis nervo lato continuo, theca suberecta turbinata, operculo longirostrato.

Hab. Hermite Island.

Allied to D. *falcatum*, but leaves narrower and more produced, and the capsule nearly or quite erect and smaller.

24. **Dicranum** *clathratum*, nov. sp.; caule gracili subramoso, foliis dissitis e basi quadrata vaginante linearibus patulis apice denticulatis obtusis solidinerviis, seta tortili, theca erecta turbinata, operculo longirostro, peristomii dentibus bi-trifidis clathratis basi perforatis.

Hab. New Zealand. Under the falls of the Kidi-Kidi River.

Nearly allied to *Dicranum vaginatum*, Hook., but of more slender habit, leaves more suddenly dilated below, more spreading and linear above, capsule not contracted below the mouth when dry, more tapering at the base, peristome very different in structure, and the operculum with a longer and more slender beak.

9. CAMPYLOPUS, *Brid.*

25. CAMPYLOPUS *capillaceus*, nov. sp.; caule elongato subramoso gracili, foliis dissitis patulis e basi dilatata vaginante longe capillaceis flexuosis integerrimis solidinerviis · perichætialibus longioribus erectis, seta arcuata, theca elliptica striata strumosa, operculo rostrato, calyptra dimidiata basi integra.

HAB. Bay of Islands, New Zealand.

Allied to *Dicranum filifolium*, Hornsch. in Fl. Brazil. which is a genuine *Campylopus*, with leaves scarcely dilated at the base. The calyptra in our moss shows the inexpediency of changing the name of the genus to *Thysanomitrium*.

10. BARBULA, *Hedw.*

26. BARBULA *densifolia*, nov. sp.; caule humili subdiviso, foliis patentibus confertis lanceolato-acuminatis acutis marginatis apice serratis nervo continuo, theca oblonga, peristomii dentibus contortis membrana basilari breviuscula, operculo subulato.

HAB. Falkland Islands.

From B. *marginata*, Bruch and Schimper, it differs in its larger size and acuminated leaves, the nerve not excurrent.

27. BARBULA *speciosa*, nov. sp.; caule elongato subramoso, foliis patulo-recurvis lanceolatis subcarinatis acutis apice serratis nervo continuo, theca cylindrica curvula, peristomii dentibus contortis tubo ad tertiam partem producto, operculo subulato.

HAB. Hermite Island, Cape Horn.

Differing from all the European *Syntrichiæ* (*Barbulæ*) in the distinctly serrated leaves, which are not at all piliferous. In size and general aspect it resembles *B. Mülleri*, Br. and Sch.

11. LOPHIODON, *Nov. Gen.*

Calyptra cuculliformis. *Seta* terminalis. *Peristomium* simplex. *Dentes* sedecim pyramidati, per paria approximati.—*Habitus* Didymodontis (Hedw.) Nomen a λοφίον, *parva crista.*

28. LOPHIODON *strictus*, Hook. fil. et Wils.

HAB. Lord Auckland's group, and Campbell's Island.

Caules sesquiunciales, graciles, ramosi. *Folia* erecta, subsecunda, stricta, siccitate appressa, rigida, basi lanceolata, longe lineari-setacea, nervo valido continuo, apice denticulata obtusa ibidem paulo latiora, flavo-viridia. *Inflorescentia* dioica; *flos masculus* terminalis, gemmiformis. *Folia perichætialia* caulinis majora, convoluta. *Seta* uncia brevior, parum tortilis, pallida. *Theca* erecta, ovato-cylindracea, basi rotundata, badia, lævis, nitida. *Peristomii* dentes conniventes, siccitate erecti, breves, apice attenuati. *Annulus* magnus. *Operculum* conico-subulatum, rectum, capsula paulo longius. *Calyptra* capsula longior, fusca.

12. DIDYMODON, *Schw.*

29. DIDYMODON? *papillatus*, nov. sp.; caule elongato ramoso, foliis patenti-recurvis trifariis ovato-lanceolatis acuminatis margine recurvis solidinerviis papillosis siccitate erectis subincurvis.—*Leskea rubricaulis*, Tayl. MSS.

HAB. Van Diemen's Land. Without fruit.

A very peculiar Moss, resembling a *Leskea*, but the *perichætia* are terminal, though apparently axillary in consequence of the growth of innovations.

13. DRYPTODON, *Brid.*

30. DRYPTODON *crispulus*, nov. sp.; caule ramoso fastigiato, foliis patentibus ex ovato longe acuminatis carinatis; nervo continuo, seta perbrevi, theca elliptica, operculo rostrato.

HAB. Campbell's Island.

Resembles *Racomitrium fasciculare* in some points, but differs in the very short setæ and pale elliptical capsule.

31. DRYPTODON *rupestris*, nov. sp.; caule gracili fastigiato ramoso, foliis patentibus ovato-lanceolatis carinatis mar-

gine recurvis, nervo subcontinuo, seta brevi, theca elliptico-oblonga erecta, operculo conico-aciculari.

Hab. Hermite Island, Cape Horn.

Allied to D. *crispulus,* but more robust, with shorter leaves not at all piliferous, and larger capsules.

14. GLYPHOCARPA, *Brid.*

32. **GLYPHOCARPA** *pusilla,* nov. sp.; caule subramoso pusillo, foliis erecto-patentibus ovatis acutis reticulatis margine planis, nervo subcontinuo, theca cernua globosa, operculo conico.

Hab. Van Diemen's Land, *D. Lyall, Esq.*

Exceedingly minute, the whole plant not two lines in height. The only species at all resembling it is G. *cernua,* Wils. MSS., a British species not yet published.

15. ORTHODONTIUM, *Schw.*

33. **ORTHODONTIUM** *australe,* nov. sp.; caule ramoso fastigiato humili, foliis erecto-patentibus erectisve subrecurvis linearibus subflexuosis, nervo subcontinuo, theca suberecta oblonga brevicolli, operculo brevirostrato.

Hab. Falkland Islands; Hermite Island, Cape Horn; and Van Diemen's Land.

Closely allied to O. *gracile,* Schwaegr. (in litt.) (*Bryum gracile,* Wils. in Eng. Bot. Suppl. t. 2835), but differs in the form of the capsule, the smaller paler peristome, and the more distinct nerve. The inflorescence is the same in both, and quite different from that of O. *lineare,* Schwaegr.

16. BRACHYMENIUM, *Hook.*

34. **BRACHYMENIUM**? *ovatum,* nov. sp.; caule humili, foliis laxe imbricatis erecto-patentibus quinquefariis ovato-oblongis nervo valido apiculatis ——.

Hab. Falkland Islands, barren.

Resembles *Tetraphis pellucida,* but differs in the excurrent nerve and 5-farious leaves.

17. BRYUM, *L.*

35. **BRYUM** *blandum*, nov. sp.; caule subsimplici, foliis erecto-patentibus imbricatis ellipticis obtusis concavis integerrimis nervo tenui subcontinuo ——.

HAB. Campbell's Island, barren.

A beautiful species, with brilliant reddish foliage, allied to B. *cellulare*, Hook. in Schwaegr. Suppl. t. 214, a., but with larger, more concave and obtuse leaves.

36. **BRYUM** *vagans*, nov. sp.; caule vage ramoso, foliis patentibus secundis ovato-lanceolatis apiculatis submarginatis apice serratis nervo subcontinuo ——.

HAB. Hermite Island, Cape Horn, barren.

Allied to B. *Wahlenbergii* (Br. and Sch.), but larger, the leaves twice as long, less succulent, margined, apiculate, and the nerve almost excurrent.

37. **BRYUM** *lævigatum*, nov. sp.; caule ramoso, foliis erecto-patentibus imbricatis ovatis concavis integerrimis siccitate erectis nervo subcontinuo, theca pendula obovato-oblonga, operculo conico obtuso.

HAB. Hermite Island, Cape Horn, and Falkland Islands, barren. Described from Van Diemen's Land specimens.

A very distinct species, characterized by its concave shining subcoriaceous leaves, intermixed with dark purple radicles.

38. **BRYUM** *tenuifolium*, nov. sp.; caule humili simplici, foliis erectis subsecundis lanceolato-subulatis acutis integerrimis margine evanidinerviis reflexis, perichætialibus longioribus attenuatis, theca subpendula oblonga curvula basi obconica subapophysata, operculo conico.

HAB. Bay of Islands, New Zealand.

A very small species allied to B. *polymorphum*, Br. and Schimp. Bryol. Eur.; but with a differently shaped capsule, the inner peristome furnished with ciliæ; probably dioicous.

18. ORTHOTRICHUM, *Hedw.*

39. **ORTHOTRICHUM** *crassifolium*, nov. sp.; caule brevi ramosiusculo, foliis erecto-patentibus lanceolato-subulatis

obtusis carnosis nervo crasso subcontinuo, theca subexserta pyriformi lævi, operculo convexo rostellato, peristomii dentibus sedecim absque ciliis, calyptra glabra.

Hab. Lord Auckland's group and Campbell's Island.

Allied perhaps to O. *psychrophilum*, Montagne; but has leaves more erect, not reflexed in the margin, and the capsule is without striæ, and furnished with a single peristome. It is very unlike O. *Magellanicum*, Montagne.

40. Orthotrichum *angustifolium*, nov. sp.; caule brevi ramosiusculo, foliis lineari-subulatis angustissimis erectis carnosis nervo continuo, theca immersa subsessili elliptica, operculo rostellato, peristomii dentibus sedecim absque ciliis.

Hab. Campbell's Island.

Allied to the last, but has longer, narrower, and almost setaceous leaves, and smaller immersed capsules.

19. Fissidens, *Hedw.*

41. Fissidens *capitatus*, nov. sp.; caule subsimplici apice subdiviso, foliis distichis quindecim-jugis confertis lineari-lanceolatis acutis siccitate incurvis nervo subcontinuo diaphano, areolis rotundis subpunctatis, setis terminalibus, theca ovata cernua, flore masculo ad basin perichætii.

Hab. Bay of Islands, New Zealand.

The stems often bear two setæ at the extremity, each from a separate perichætium on a short ramulus, with an intermediate perigonium, containing 8-10 antheridia without paraphyses.

42. Fissidens *oblongifolius*, nov. sp.; caule subramoso, foliis distichis viginti-jugis linearibus obtusis siccitate incurvis nervo subcontinuo pellucido, areolis guttulatis, seta terminali, theca ovata cernua, flore masculo axillari.

Hab. Bay of Islands, New Zealand.

Differs from the last in the linear obtuse leaves, of firmer texture, and more intense yellowish green colour; also in the position of the perigonia.

20. PHYLLOGONIUM, *Brid.*

43. PHYLLOGONIUM *elegans*, nov. sp.; caule repente vage ramoso humili, ramis subsimplicibus brevibus compressis, foliis distichis arcte et concinne imbricatis oblongis subcymbiformibus obtusis compresso-carinatis integerrimis enerviis, seta brevi, theca suberecta obovata, operculo conico-rostrato, calyptra mitræformi subpilosa basi lacera.

HAB. Bay of Islands, New Zealand.

A very small beautiful shining species, closely allied to *Phyllog. fulgens*, Brid., of which we have seen no perfect specimens; hence we are unable to determine whether a cuculliform calyptra be a proper feature of the genus, which as constituted by Bridel is untenable, including both acrocarpous and pleurocarpous Mosses.

21. HYMENODON, (*Nov. Gen.*)

Seta lateralis, basilaris. *Peristomium* simplex; *dentes* sedecim, membranacei, fugaces, æquidistantes, lineari-subulati imperforati in cupulam conniventes apicibusque cohærentes, membrana basilari angusta persistente connexi. *Calyptra* dimidiata. Nomen ab υμην et οδων.—Genus *proprium, filicoideum, habitu* Rhizogonio (*Brid.*) Surculi *frondiformes, dense fasciculati, erecti, perichætia ad basin gerentes.* Folia *subdisticha, æruginosa, papillosa, humorem repellentia.* Theca *alte pedunculata, suberecta, subcylindracea.* Habitatio *arborea.* Vita *perennis.*

44. HYMENODON *piliferus*, Hook. fil. et Wils.

HAB. Van Diemen's Land, and New Zealand.

23. HOOKERIA, Sm.

45. HOOKERIA *pulchella*, nov. sp.; caule procumbente disticho ramoso, ramis compressis, foliis confertis imbricatis subdistichis obovatis obtusis marginatis seminerviis, theca suberecta oblonga apophysata, operculo rostrato, calyptra basi densissime fimbriata superne glabra.

HAB. Lord Auckland's group.

A beautiful little species of a pale straw colour, with the calyptra exactly as in *Daltonia splachnoides,* (Schwaegr.) connecting that moss with the genuine *Hookeriæ.*

46. HOOKERIA *nervosa,* nov. sp.; caule ramosiusculo fastigiato, foliis imbricatis erecto-patentibus ovato-lanceolatis acuminatis carinatis marginatis integerrimis solidinerviis, theca ovato-cylindrica erecta apophysata, calyptra basi fimbriata.

HAB. Lord Auckland's group.

Exceedingly like *Daltonia splachnoides,* differing thus:—Inflorescence not hermaphrodite as in that moss, peristome shorter, inner one more decidedly that of *Hookeria,* calyptra twice as long, capsule more oblong, leaves wider, more spreading and carinate, the nerve extending quite to the apex.

47. HOOKERIA *apiculata,* nov. sp.; caule compresso simpliciusculo, foliis imbricato-distichis rotundatis apiculatis marginatis apice subdenticulatis subenerviis.

HAB. Hermite Island, Cape Horn, barren.

Differs from H. *asplenioides,* Schwægr. in its smaller size and the more entire leaves, which have the margin distinctly cartilaginous, undulated when dry.

48. HOOKERIA *flaccida,* nov. sp.; caule elongato erecto debili ramosiusculo, foliis imbricatis erecto-patentibus ellipticis concavis obtusis apiculatis integerrimis anguste marginatis evanidinerviis, seta elongata lævi, theca erecta obovato-oblonga, operculo rostrato, calyptra glabra basi fimbriata.

HAB. Hermite Island, Cape Horn.

A very remarkable species, of soft delicate texture, with the calyptra as in *Daltonia splachnoides.*

49. HOOKERIA *Dicksoni,* Hook. mss.; caule ramoso complanato, ramis compressis, foliis laxe imbricatis subdistichis elliptico-oblongis undulatis integerrimis marginatis seminerviis acumine brevi, seta lævi, theca elliptica cernua, operculo rostellato, calyptra glabra.

HAB. Hermite Island, Cape Horn and Falklands.

Allied to H. *pulchella*, but has leaves less crowded, more erect, less obtuse, elliptical and shortly acuminated with larger areolæ, the capsules larger and decidedly cernuous. In the original specimen from Mr. Dickson, the calyptra is fringed at the base; but our specimens from the above Islands scarcely exhibit this character.

50. HOOKERIA *dentata*, nov. sp.; caule erectiusculo subramoso, foliis laxe imbricatis subquadrifariis lateralibus distichis intermediis appressis subrotundis grosse dentatis seminerviis, theca pendula ovata, operculo rostrato, calyptra glabra.

HAB. Lord Auckland's group and Campbell's Island.

Allied to H. *quadrifaria*, *Hook.*; but smaller, and easily known by its dentate leaves. In general aspect it approaches H. *cristata*.

51. HOOKERIA *punctata*, nov. sp.; caule pinnatim ramoso, ramis compressis, foliis subdistichis imbricatis patentibus obovatis subapiculatis serrulatis punctato-areolatis seminerviis, perichætialibus squarrosis, seta lævi, theca nutante elliptica, operculo rostrato, calyptra glabra albida carnosa.

var. β *oblongifolia*; ramis minus compressis, foliis erecto-patentibus oblongo-obovatis siccitate undulatis eroso-denticulatis nervo validiore ultramedium attingente.

HAB. Bay of Islands, New Zealand.

Remarkable for the minutely punctate areolation of the leaves.

The var. β may perhaps prove to be a different species, with stems subdendroid, more decidedly and copiously pinnate, the leaves longer, less spreading, of a darker green, and undulated.

52. HOOKERIA *crispula*, nov. sp.; caule ramoso complanato, ramis compressis, foliis laxe imbricatis subdistichis patentibus subobliquis apiculatis marginatis subundulatis integerrimis seminerviis opacis inferne pellucidis siccitate

crispatis, perichætialibus ovato-acuminatis, seta lævi, theca ovata horizontali, operculo rostrato, calyptra subpilosa basi fimbriata.

Hab. Bay of Islands, New Zealand.

A small species allied to H. *Dicksoni*, but with the areolation of the leaf much more minute, calyptra like that of *Daltonia splachnoides*.

53. **Hookeria** *rotundifolia*, nov. sp.; caule ramoso complanato, ramis compressis, foliis imbricatis subdistichis ovato-rotundis apiculatis marginatis apice denticulatis seminerviis (areolis majusculis hexagonis), seta lævi, theca elliptico-oblonga horizontali, operculo rostrato.

Hab. Bay of Islands, New Zealand.

Still more closely allied to H. *Dicksoni*, but differs in the smaller leaves, with a broader denticulate margin. From H. *crispula*, which it also much resembles, it is distinguished by the rounder leaves, with larger and more uniform areolæ.

24. Leskea, *Hedw.*

54. **Leskea** *nitida*, nov. sp.; caule vage ramoso, ramis longiusculis subsimplicibus teretibus, foliis imbricatis suberectis ovato-oblongis acuminatis concavis integerrimis basi binerviis, seta lævi, theca cylindrica suberecta curvula, operculo brevirostrato.

Hab. Hermite Island, Cape Horn, barren. Described in part from a specimen gathered in Staten Land, by *Menzies*. No. 18.

Resembles *Hypnum stramineum*, but has the leaves acuminated, and almost piliferous, and the operculum rostrate.

25. Hypnum, *L.*

56. **Hypnum** *elongatum*, nov. sp.; caule elongato robusto subramoso, ramis elongatis, foliis erecto-patentibus ovato-lanceolatis apiculatis striatis serrulatis nervo excurrente.

Hab. Lord Auckland's group and Campbell's Island, barren.

Similar to H. *densum*, *Sw.*; but has leaves less attenuated

above, less distinctly serrated, not fragile, and the nerve excurrent.

56. Hypnum *consimile*, nov. sp.; caule elongato subramoso debili, foliis erecto-patentibus superioribus secundis ovato-lanceolatis acuminatis serrulatis striatis nervo subexcurrente.

Hab. Lord Auckland's group.

Like the last, but with leaves of a different shape, gradually tapering to a point, more minutely serrulate, nerve stronger, and the areolation more minute.

57. Hypnum *scabrifolium*, nov. sp.; caule pinnato, foliis laxe imbricatis ovato-lanceolatis acuminatis margine scabris dorso papillosis nervo valido subexcurrente.

Hab. Lord Auckland's group, barren.

Allied to *H. crispifolium*, Hook.; but smaller, and the leaves not plicate nor falcate.

58. Hypnum *hispidum*, nov. sp.; caule arcuato ramosiusculo, foliis imbricatis falcato-secundis ovatis longe acuminatis plicatis integerrimis nervo crasso longe excurrente, seta lævi, theca ovata æquali, operculo longirostro.

Hab. Lord Auckland's group, barren. Described, as to the fructification, from New Zealand specimens.

Apparently amphibious; the elongated aquatic state resembles *Anictangium aquaticum*, Hedw.

59. Hypnum *chlamydophyllum*, nov. sp; caule ramosiusculo, ramis elongatis simplicibus apice cuspidatis, foliis imbricatis patulis quadrato-rotundis obtusis concavis basi truncatis integerrimis nervo breviusculo evanido, seta elongata gracili lævi, theca ovato-oblonga cernua, operculo conico.

Hab. Campbell's Island, barren. Described in part from Van Diemen's Land specimens.

Allied to H. *cochlearifolium*, Schwaegr. but differing in the cuspidate branches, broader and more flaccid leaves, curiously widened and truncated at the base, where a number of large pellucid cells are visible; the seta also is longer and more slender. From H. *auriculatum*, Mont. it differs in its wider leaves.

60. Hypnum *gracile*, nov. sp.; caule ramoso, ramis gracilibus subrecurvis, foliis imbricatis secundis erecto-patentibus ellipticis obtusiusculis concavis subdenticulatis subenerviis, perichætialibus squarrosis.

Hab. Lord Auckland's group, without fruit.

Allied to H. *micans*, Wils. in Hook. Br. Fl., but has larger leaves, not recurved at the margin.

61. Hypnum *acutifolium*, nov. sp.; caule fastigiato ramoso, foliis dense imbricatis suberectis elliptico-lanceolatis acuminatis enerviis integerrimis.

Hab. Campbell's Island, barren.

Allied to H. *extenuatum*, Brid.? but smaller, with the leaves more erect, and tapering gradually to a very narrow point.

62. Hypnum *politum*, nov. sp.; caule ramoso compresso, foliis distichis patentibus oblongis compresso-carinatis subpiliferis integerrimis enerviis, seta lævi, theca suberecta oblonga.

Hab. Hermite Island, Cape Horn, with capsules. Kerguelen's Island, barren.

A very beautiful, silky moss, unlike any described species, and, except in the peristome, more like a *Leskea*.

63. Hypnum *reticulatum*, nov. sp.; caule erecto simpliciusculo, foliis distichis patentibus ovato-lanceolatis acuminatis vix piliferis submarginatis reticulatis apice serrulatis nervo tenui subexcurrente.

Hab. Hermite Island, Cape Horn, barren.

Differs from H. *subbasilare*, Hook. in the acuminated and distichous leaves and the subexcurrent nerve. In habit it much resembles H. *denticulatum*.

64. Hypnum *subpilosum*, nov. sp.; caule subfastigiato ramoso, foliis imbricatis suberectis cordato-ovatis acuminatis subpiliferis concavis striatis serrulatis ruptinerviis.

Hab. Hermite Island, Cape Horn, barren.

Nearly allied to H. *rutabulum*, but smaller, the leaves more rigid and more closely imbricated.

65. Hypnum *conspissatum*, nov. sp.; caule elongato ramoso,

foliis secundis patentibus ovato-lanceolatis acuminatis margine incrassatis integerrimis solidinerviis.

HAB. Kerguelen's Island and Falkland Islands.

The leaves resemble those of *Cinclidotus fontinaloides*, but the habit is different, and more like that of *Hypnum ruscifolium.*

66. HYPNUM *paradoxum*, nov. sp.; caule repente subpinnato, foliis falcato-secundis ovato-lanceolatis acuminatis striatis serrulatis ruptinerviis, seta scabra, theca cernua ovato-oblonga.

HAB. Hermite Island, Cape Horn.

In everything but the scabrous seta this moss is exceedingly like H. *aduncum.*

67. HYPNUM *lucidum*, n. sp.; caule ramoso humili, foliis imbricatis erecto-patentibus ovato-acuminatis apice attenuatis integerrimis margine reflexis basi binerviis, seta lævi, theca cernua ovato-oblonga.

HAB. Hermite Island, Cape Horn.

Resembles H. *Silesiacum*, Schwaegr. but in character wholly different, and more allied to H. *adnatum*, Hedw. from which it differs in its flaccid leaves, which have the margin recurved to the summit as in H. *rugulosum.*

63. HYPNUM *falcifolium*, nov. sp.; caule procumbente vage ramoso, ramis brevibus subsimplicibus compressis, foliis distichis imbricatis patentibus oblongo-acinaciformibus obtusis enerviis integerrimis, seta lævi, theca elliptico-oblonga nutante, operculo conico.

HAB. Bay of Islands, New Zealand.

A very beautiful and remarkable species with shining leaves; in habit allied to *Leskea trichomanoides*, but with the peristome truly that of a *Hypnum.*

69. HYPNUM *marginatum*, nov. sp.; dendroideum, caule erecto fasciculatim ramoso, foliis laxe subbifariam imbricatis erecto-patentibus ovato-oblongis concaviusculis marginatis serrulatis solidinerviis (nervo dorso spinuloso), theca cernua cylindrica curvula sulcata, operculo rostrato.

HAB. Bay of Islands, New Zealand.

Allied to H. *spininervium*, Hook. but taller, the leaves more distant and oblique, less strongly serrated, distinctly bordered, nerve stronger and reticulation smaller.

70. HYPNUM *pulvinatum*, nov. sp.; caule humili diviso pinnatim ramoso, foliis imbricatis erecto-patentibus ramulinis subsecundis ovatis acuminatis concaviusculis enerviis integerrimis, perichætialibus squarrosis, seta lævi, theca ovata cernua.

HAB. Bay of Islands, New Zealand.

Somewhat allied in habit to H. *myosuroides*, but smaller. We have not seen the operculum.

71. HYPNUM *crinitum*, nov. sp.; caule procumbente bipinnatim ramoso, ramis planiusculis apice cuspidatis, foliis patentibus ellipticis concavis convolutis obtusis longe piliferis integerrimis subenerviis, seta lævi, theca subovata cernua, operculo conico.

HAB. Van Diemen's Land.

Differs from Bridel's description of H. *extenuatum* in the following particulars. Stem pinnate, branches not flagelliform, leaves not ovate-lanceolate, the areolæ not "laxe-rhomboideæ," nor are any of the leaves destitute of piliform terminations, and there is no resemblance to H. *cupressiforme.*

72. HYPNUM *Drummondii*, Tayl. mss.; caule vage ramoso, ramis subsimplicibus subincurvis, foliis patentibus secundis (surrectis) ovatis acutis margine recurvis integerrimis enerviis, seta lævi, theca suberecta oblonga curvula, operculo longirostrato.—H. *Drummondii, Tayl. mss. sine descript.*

Van Diemen's Land. (1840). Found also at King George's Sound, New Holland, by *Mr. Cunningham*, and at Swan River by *Mr. James Drummond.*

This moss is allied to H. *Haldianum*, Greville (which is the original name for the moss named H. *curvirostre*, *Bridel*, Br. Un.) and to H. *Loxense*, Schwaegr. but has the leaves more decidedly recurved in the margin, the whole plant smaller, of a shining golden brown colour, tinged below with red.

73. HYPNUM *divulsum*, nov. sp.; caule rigido crasso subdendroideo superne ramoso, ramis confertis subsimplicibus incurviusculis, foliis patulis laxe imbricatis obovato-rotundatis concavis obtusissimis minutissime serrulatis seminerviis areolis punctatis, seta lævi, theca ovata cernua, operculo conico-acuminato.

HAB. Van Diemen's Land.

In habit not unlike H. *vagans*, Hornsch., but that has apiculate leaves, less widely patent, and is altogether a more handsome moss.

(*To be continued*).

HEPATICÆ NOVÆ ZELANDIÆ *et* TASMANIÆ; *being characters and brief descriptions of the* HEPATICÆ *discovered in the Islands of New Zealand and Van Diemen's Land, during the Voyage of H.M. Discovery Ships Erebus and Terror, together with those collected by* R. C. Gunn *and* W. Colenso, Esqrs.; *by* DR. J. D. HOOKER *and* DR. THOMAS TAYLOR.

Continued from page 481 *of the Volume.*)

III.—SPECIES OF NEW ZEALAND.

JUNGERMANNIA, *L.*

(Gottschea, *Nees v. Esenbeck*).

1. *J. Balfouriana*, n. sp.; caule subcæspitoso erecto subramoso squamoso, foliis subimbricatis patentibus planis lobo ventrali oblongo subtus apicem versus cristato cristis tribus lanceolatis ciliatis dorsali semiovato utroque obtuso ciliato, stipulis quadrato-rotundatis quadrifidis laciniis obtusis ciliato-dentatis.

HAB. New Zealand, *Dr. Stanger and Mr. Colenso.*

Stems about two inches high, pale green, rising from a creeping root, the scales lanceolate, ciliate. Leaves crowded but scarcely imbricated, oblong-lanceolate, very obtuse, bearing above a vertical lobe more than half the length of the leaf, the two lobes at their bases embrace the stem. Both

lobes, as well as the laciniæ of the stipules, are obtuse and ciliated.

In February, 1842, Dr. Taylor received this New Zealand species from Dr. Balfour of Glasgow, with whose permission, and after whom, it has been named. More lately, the same has been collected by Mr. Colenso, and in the same Island. The *Gottscheæ* of Nees are a tribe of *Jungermanniæ* unknown to the northern hemisphere, while in the southern they range from the latitude of Cape Horn to within six degrees of the equator, as at Java, whence three species have been brought to Europe. Of these it is to *Gottschea Blumii* of Nees that the present is most nearly allied, and from which it may be distinguished by the smaller size, by its leaves less falcate, by the more entire cauline scales, and above all by the quadrifid stipules.

2. *J. repleta*, n. sp.; caule cæspitoso erecto ramoso, foliis imbricatis erecto-patentibus amplexicaulibus lobo ventrali late ovato-lanceolato subacuto subtus apicem versus cristato cristis tribus subintegerrimis dorsali foliigeno late ovato uniplicato utroque dentato, stipulis imbricatis oblongis bifidis segmentis bilaciniatis ciliatis.

Hab. New Zealand, *Mr. Colenso.*

Tufts close, very pale, pea-green. Roots purple. Stems about two inches high, branched above. Leaves about one eighth of an inch long, more erect when dry, nearly patent when moistened, scarcely acute, the cellules large, the teeth of the margin are very long and usually a little curved. The dorsal lobe is shorter than the ventral. Stipules deeply bifid, their segments with shallower divisions. There are no scales on the stems. The margins of the leaves are so incised as to give them the appearance of being sublobate.

From the preceding, this species may be distinguished by the shorter, wider, and more acute leaves, by their larger dentation and by the bifid stipules; from *Gottschea Blumii*, Nees, by the shorter, straighter, and more acute leaves, and from both by the absence of cauline scales.

3. *J. appendiculata*, Hook.; *Musci Exot. t.* 15.

HAB. New Zealand.

4. *J. unguicularis*, n. sp.; caule subcæspitoso prostrato subramoso complanato squamoso, foliis imbricatis patentibus amplexicaulibus lobo ventrali elongate elliptico obtuso basi antica elongata ciliata cæterum dentato subuniplicato dorsali latè ovato truncato ciliato-dentato, stipulis bifidis segmentis laciniatis ciliatis.

HAB. New Zealand.

Patches lying flat on decayed bark of trees, very pale pea-green. Stems scarcely one and a half inches high, with one or two erect annual shoots from their summits. The leaves lie nearly in the same plane and embrace the stem between the lobes, the ventral lobe is remarkably ciliated at the ante-base; the joining of the dorsal lobe is protracted on the ventral into a linear crest. Cauline scales linear, divided above into two or three linear-setaceous branches. The elongated ciliæ of the leaves, stipules and cauline scales being composed of a single series of cellules, appear articulated. Stipules large, bifid, each segment usually bilaciniated, sometimes however the stipule is composed of three laciniæ only.

The present species, in character, comes very near to our *J. repleta*. It is distinguished by its scaly stem, its more obtuse ventral lobe, which too is elongato-ciliate at the base, by the very distinctly truncate dorsal lobe, and by the deeper laciniation of its stipules. It is besides of a brighter, though paler green colour, and its stems are shorter.

5. *J. tuloides*, n. sp.; caule disperso procumbente abbreviato subramoso, foliis imbricatis patentibus apice dentatis lobo ventrali ovato-lanceolato acuto dorsali breviore ovato apice truncato margine anteriore recurvo.

HAB. New Zealand, *Mr. Colenso.*

Plants growing among tufts of other *Musci* or *Hepaticæ*, about half an inch long, very pale greenish-yellow, subcompressed, wide, short, their tops obtuse. Leaves thickly set, embracing the stems by their bases: the lower leaves are scarcely dentate, but the upper and younger have large rather obtuse teeth; the dorsal lobe, not half the size of the ventral, is truncate at the top, and is concave from the anterior margin being reflexed. There are no stipules.

This is allied to *Gottschea aligera* of Nees from Java, by the figure of both lobes of the leaves; but these are less toothed and the stipules are altogether wanting.

(Jungermannia, *Nees v. Esenbeck.*)

6. *J. monodon*, n. sp.; caule cæspitoso procumbente vage subramoso apice incurvo, foliis imbricatis erecto-patentibus secundis unico dente apiculatis, calyce terminali ovato inflato plicato acuminulato ore denticulato.

HAB. New Zealand.

Patches lying usually on other *Musci* or *Jungermanniæ*, of a dusky, tawny colour. Stems scarcely one inch long, channelled on the upper side, sending down rootlets from their entire length. The lower leaves much the smallest, all of them pointing upwards. Perichætial leaves four, the exterior bifid, the interior trifid, all of them denticulate. Calyces widely ovate, longitudinally plicate.

This has been compared to *Jung. contracta* of Nees, from Java. It may be known to be different by its shorter stems, incurved at their summits, and by the more densely imbricated leaves, which are more obtuse and strikingly unidentate.

7. *J. inundata*, n. sp.; caule implexo prostrato subramoso, foliis subimbricatis subpatentibus oblongo-rotundatis concavis integerrimis margine apicali incurvo, stipulis ovatis acutis bidentatis, calyce terminali oblongo apice dentato, capsula sphærica.

HAB. In inundated situations, New Zealand.

Patches several inches broad, pale dusky green. Stems scarcely one inch long. Leaves approximated, often homomallous, slightly decurrent in front, their structure dense. Stipules large, broadly ovate, having a shallow notch on the very summit; sometimes this notch is wanting. Perichætial leaves larger and more patent than the cauline. Calyx broadly oblong, thick, plicate at the summit, and dividing into four or five short blunt teeth. Pedicel about half an inch long. Capsule sphærical; seeds brownish-red, numerous; spiral filaments broad in the middle, much acuminated at both ends, having a double helix.

8. *J. rotata*, n. sp.; caule implexo procumbente recurvo ramoso, ramis patenti-recurvis, foliis imbricatis erecto-patentibus secundis rotundatis concaviusculis integerrimis margine anteriore subdecurrente.

HAB. New Zealand.

Patches several inches in diameter; the older parts blackish, the newer parts olive. Stems three inches long, much and irregularly branched, the branches frequently curving back. Leaves with an oblique base across the stem, otherwise nearly round, their margin by no means incrassated, their structure densely cellular.

The determination of this species, whose fructification is unknown, is unsatisfactory, from its strong resemblance to *Jung. Schraderi* of Martius. It appears to be distinct by its greater size, by the minuter cellules of its leaves and more branched habit.

(Gymnanthe, *Tayl.*)

9. *J. tenella*, nobis supra, p. 377.

HAB. New Zealand.

(Lophocolea, *Nees v. Esenbeck*).

10. *J. diademata*, n. sp.; caule implexo prostrato complanato vage ramoso, foliis subcontiguis patentibus ovato-oblongis emarginatis segmentis divaricatis spiniformibus, stipulis quadrifidis segmentis linearibus, calyce terminali cylindraceo-oblongo triquetro trialato alis dentatis bilabiato ciliato labio inferiore longiore bifido.

HAB. New Zealand.

Patches thin, several inches wide, pale dusky olive. Stem about one inch long; the branches few, patent. Leaves scarcely imbricated, lying in the same plane, oblong, the outline swelling out about the middle of the anterior margin, their cells large, their *sinus* obtuse, the segments much divaricated. The stipules have four setaceous segments which are quite entire. The perichætial leaves are more erect, wider, and their margin is more waved than the cauline, they are sometimes sparingly dentate. The oblong triquetrous calyx has the mouth beautifully fringed and one lip much longer than the other; it has usually three wings which are strongly dentate. The perigonia occur about the middle of a shoot and consist of closely imbricated, adpressed, upright leaves, ventricose at the base, their points standing out from the stem; the stipules of the perigonia are less compounded than those of the rest of the stem, being for the most part simply bifid. The capsule is oblong, splitting into four elliptical valves, discharging numerous, minute, round seeds and spiral filaments with a double helix.

This species approaches the European *Jung. bidentata* L. differing from it by its smaller size, more deeply notched leaves, their segments more elongated, by the quadrifid stipules with entire segments, but above all by the inequality of the two lips of the calyx.

11. *J. physantha*, n. sp.; caule implexo procumbente ramoso, foliis imbricatis patentibus oblongo-ovatis antice gibbosis longius bidentatis cæterum integerrimis, stipulis bifidis utrinque unidentatis, calyce laterali subrotundo truncato basi tumido apice compresso longius ciliato.

Hab. New Zealand.

Patches more than two inches wide, dusky yellowish-green. Stems two inches long. Leaves of the young shoots often secund, the older lying in the same plane, largely cellulose. Stipules in four segments of which the two lateral are the shortest and most patent; calyx rising from the side of the branch, covered by three larger perichætial leaves, bifid and here and there toothed: these, again, often lie within two or three cauline leaves which depart from their usual direction and become adpressed to the perichætium, such are often trifid at their summits. Pedicel about one inch long. Capsule oval, splitting into four valves and discharging numerous brown seeds and spiral filaments with a double helix, the last portions of which remain fixed at the bottom of the capsule.

The present is exceedingly like our *Jung. multipenna*; it may be known by the pair of spines terminating the leaves, as well as by its short tumid, truncate calyx.

12. *J. chlorophylla*, n. sp.; caule implexo procumbente ramoso, foliis imbricatis patentibus rotundato-ovatis tridentatis, stipulis rotundato-oblongis bifidis laciniis dentato-ciliatis.

HAB. New Zealand.

Patches some inches wide, pale yellowish-green. Leaves often secund, bifid at the summit but with an anterior large tooth, so as to appear tridentate, but the circular sinus is between the two posterior teeth. The perichætial leaves are larger, more erect and rounder than the cauline and are for the most part dentate on each side of the division at the summit. Stipules large in proportion to the stem, being three times as wide, and like the leaves have but a shallow division at their summits.

13. *J. lenta*, nobis, ante p. 379.

HAB. New Zealand.

14. *J. recurvifolia*, n. sp.; caule implexo prostrato ramoso, foliis imbricatis patentibus apice recurvis ovatis antice gibbosis rotundato-emarginatis bidentatis, stipulis minutis lanceolatis bipartitis segmentis integerrimis.

HAB. New Zealand.

Patches wide, dusky olive-coloured. Stems about one inch long, irregularly branched. Leaves, even in the moistened state, recurved at their tops, their emargination is deep and curved and their teeth are large and bent towards each other.

It is difficult to state the characters by which the present is distinguished from our *Jung. allodonta*; however, we constantly find the cells of the leaves smaller, the leaves shorter and having the anterior margin gibbous, the two large teeth more constantly present and the entire plant smaller.

(Chiloscyphus, *Nees v. Esenbeck*).

15. *J. canaliculata*, n. sp.; caule subcæspitoso prostrato subramoso, foliis imbricatis erecto-patentibus oblongo-rotundatis subintegerrimis apice siccitate recurvis, stipulis bifidis segmentis laciniatis, calyce terminali oblongo subcompresso ore bilabiato denticulato.

HAB. New Zealand.

Patches about two inches wide, pale yellowish-green. Stems scarcely half an inch long, when dry appearing channelled above from the recurvation of the tops of the leaves. These are scarcely decurrent, oblongo-rotundate, mostly entire, yet towards the top of the stem they shew a few very indistinct teeth. Calyx tumid, widely oblong, the bilabiate top sub-compressed previous to the egress of the capsule. Perigonia short, terminal spikes of closely set ventricose denticulate leaves, each containing in the axil a single pedicellated anther.

16. *J. oblongifolia*, n. sp.; caule implexo prostrato vage ramoso, ramis patentibus complanatis, foliis contiguis patentibus planis oblongis apice retusis bidentatis cæterum integerrimis cum stipula obovata dentata recurva connatis.

HAB. New Zealand.

Patches four inches wide, blackish-green. Stems two inches long, flattish, at length turning black, often simple, sometimes with two or three branches at right angles to the stem. Leaves scarcely imbricated, when dry lying in one plane, when moistened slightly inclining to one another, their lower margin meeting the stem at a more acute angle than the upper, from a broad base oblong, very obtuse or rather retuse, having a spiniform tooth at the extremity of each margin, with a wide slightly waved sinus between, posteriorly the leaves grow to the stipules; these have from six to eight large teeth, are recurved and have one decurrent side longer than the other.

This species bears some resemblance to *Jung. integrifolia* L. et L., in this, however, the termination of the leaf is altogether destitute of the two remarkable teeth present in our species.

(Plagiochila, *Nees v. Esenbeck*).

17. *J. gigantea*, Hook. *Musci Exot. t.* 93.

Hab. New Zealand.

18. *J. decipiens*, Hook. *Brit. Jungermanniæ, t.* 50.

Hab. New Zealand.

19. *J. incurvicolla*, n. sp.; caule cæspitoso erecto apice incurvo subramoso, foliis imbricatis erecto-patentibus secundis ex angusta basi rotundatis margine incurvis antice dentatis.

Hab. New Zealand.

Tufts wide, blackish-olive. Stems about half an inch high, bending at their tops in the same direction. Leaves convex from the recurvation of both margins, round, yet slightly gibbous on the inferior side, secund, those on the top of the shoot compressed, dentation large in proportion to the size of the leaf. Structure densely cellular.

The present approaches nearer to *Jung. punctata*, Tayl., lately found in Ireland, than to any other of the tribe; from this it may be known by its smaller size, darker colour, its more round leaves, and their dentation more frequent as well as more minute.

20. *J. gregaria*, n. sp.; caule cæspitoso erecto ramoso capitato, foliis imbricatis erecto-patentibus secundis margine recurvis integerrimis, calyce terminali oblongo truncato apice scarioso integerrimo, capsula sphærica.

Hab. New Zealand.

Tufts several inches wide, pale dusky olive-green. Stems two inches high, irregularly branched, branches erect. Leaves suddenly enlarging at the top of the stems into a flat capitulus; entire, or, on the young shoots, showing now and then, only a single diminutive tooth; perichætial leaves subdenticulate. Calyx large yet short, wide, oblong, split down on one side, the mouth subcompressed, whitish and skinny and quite entire. Capsule globular.

In characters this species comes very near to *Plagiochila interrupta* of Lindenberg from Switzerland. The present, however, is much larger, more erect, while the leaves are longer and more convex.

21. *J. fruticella*, n. sp.; caule cæspitoso erecto ramoso basi subnudo, foliis contiguis erecto-patentibus ex angusta basi obovatis margine recurvis apice subtridentatis, calyce terminali obovato subcompresso bilabiato ciliato-dentato.

HAB. New Zealand.

Patches loose, wide, pale green. Stems four inches high, naked below, repeatedly branched and fascicled above; the branches erecto-patent, bending. Leaves not imbricated, just touching one another, convex from the recurvation of the margins, teeth three or four, sometimes only two, limited to the tops of the leaves, except the perichætial which are more extensively dentate, and the terminating pair are erect and adpressed to the calyx. This has a wide mouth closely toothed, almost ciliated. The single perigonium observed was a lanceolate terminal spike, more pale than the cauline leaves.

This species is strongly allied to *Plagiochila sciophila*, Lind. from Nepal; this last however is a prostrate species, is much smaller, has the leaves shorter, their anterior margin more curved and by no means has a dendroid habit.

(Lepidozea, *Nees v. Esenbeck*).

22. *J. lævifolia*, nobis supra, p. 385.

HAB. New Zealand.

23. *J. tetradactyla*, nobis supra, p. 386.

HAB. New Zealand.

(Mastigobryum, *Nees v. Esenbeck*).

24. *J. Novæ-Hollandiæ*, Nees.

HAB. New Zealand.

(Mastigophora, *Nees v. Esenbeck*).

25. *J. flagellifera*, Hook. *Musci Exot. t.* 59.

HAB. New Zealand.

(Trichocolea, *Nees v. Esenbeck*).

26. *J. lanata*, Hook. *Musci Exot. t.* 116.
HAB. New Zealand.
27. *J. mollissima*, nobis supra, p. 390.
HAB. New Zealand.

(Radula, *Nees v. Esenbeck*).

28. *J. marginata*, n. sp.; caule implexo procumbente complanato vage ramoso, foliis distichis subimbricatis patentibus lobo superiori oblongo-rotundato integerrimo marginato inferiori ovato-lanceolato obtuso, calyce terminali elongato cylindraceo compresso bilabiato labiis subtruncatis integerrimis.
HAB. New Zealand.

Patches several inches in diameter, dark olive. Stems three inches long, branches short, erecto-patent. Leaves about half a line long, in the dry state they have a reflexed margin, when moistened this is seen to arise from an opaque band surrounding the leaf and just within its extreme margin; the inferior lobe lies close to the stem and is longer than usual in this tribe. Perichætial leaves erect and elongated. Calyx very narrow at the base and three times as long as the perichætium, marginated at each side.

From *Jung. complanata* L., and from every other known species of this tribe, the singular margination of the leaf will at once distinguish the present.

(Madotheca, *Nees v. Esenbeck*).

29. *J. platyphylla*, L.
HAB. New Zealand.

(Frullania, *Nees v. Esenbeck*.)

30. *J. clavigera*, Hook. *Musci Exot. t.* 70.
HAB. New Zealand.
31. *J. pycnantha*. n. sp.; caule cæspitoso procumbente sub-

pinnatim ramoso, ramis perichætialibus creberrimis, foliis imbricatis transversalibus patentibus lobo superiori rotundato integerrimo siccitate margine recurvo basi utrinque aurito inferiori minuto galeiformi, stipulis oblongis bifidis margine reflexis.

HAB. New Zealand.

Patches a foot or more in diameter, pale olive green, the older parts brown, closely matted together. Stems about two inches long, slender, cauline branches few, the perichætial very frequent, alternate and giving the shoot a pinnate appearance. The leaves have their planes nearly perpendicular to the stem, imbricated and adpressed when dry, but opening out so as not to touch one another when moistened, the margin towards the top is remarkably recurved in the dry state. Leaves amplexicaul, but just near to their insertion turning off from the stem into a round flat process at each side, which is very characteristic. Stipules scarcely wider than the stems. The perichætial leaves much longer than the cauline, upright, somewhat concave, and in place of the lesser cauline lobe have each a lanceolate, flat, erect, toothed process, the stipular leaf is bifid and with the segments toothed.

In habit the present is not unlike the preceding, but the characters given shew wide differences between these species.

(Thysananthus, *Nees v. Esenbeck*).

32. *J. anguiformis*, n. sp.; caule cæspitoso erecto subramoso, ramis erectis, foliis arcte imbricatis madore patentibus lobo superiori oblongo rotundato, margine recurvo integerrimo inferiori lanceolato involuto, stipulis late rotundatis, calyce axillari oblongo subcompresso dorso bialato apice tubo minuto coronato.

HAB. New Zealand, *Colenso*.

Tufts two inches wide, pale dusky olive. Stems about one inch high, the branches parallel and erect. Leaves in a dry state closely imbricated and adpressed, giving the shoots a cylindrical appearance, when moistened, however, they become patent with their tops recurved. The stipules are imbricated, thin, round, broader than long. Calyces flattened and compressed beneath, and have two ridges on the upper and convex surface besides the lateral wings.

The present differs from *Thysananthus comosus*, Lind., from Guyana by its smaller size, by the more rounded tops of the leaves, by the absence of a decurrent tooth at each side to the stipules, which too are broader than long and their margins are plane not recurved.

(Lejeunia, *Sprengel*).

33. *J. serpyllifolia*, Dicks. *Crypt. Fascic.* 4, *p.* 19.

HAB. New Zealand.

34. *J. olivacea*, n. sp.; caule implexo procumbente subpinnatim ramoso, foliis imbricatis patentibus siccitate rugosis lobo superiori rotundato-oblongo recurvo integerrimo apice margine inflexo inferiori ovato involuto unidentato, stipulis latis rotundatis integerrimis, calyce demum axillari oblongo quadrialato striato tubo minuto coronato.

HAB. New Zealand, *Colenso.*

Patches several inches in diameter, olive-coloured as in *Parmelia olivacea*, Ach. Stems about half an inch long; branches short, thick, much clustered in the patch. Leaves appearing wrinkled when dry from the turning in of the anterior margin, their tops discharging colour and becoming white and skinny by old age; the lesser lobe tumid, having a single tooth near its junction with the upper lobe outwards. Stipules large, widely elliptical, entire, but the margin liable to be corroded by insects or by time.

This is allied to *Jung. conferta*, Meissner, which, however is a smaller plant, with less opaque leaves and whose inferior lobe wants the single tooth conspicuous in the present.

35. *J. nudipes*, n. sp.; caule implexo prostrato ramoso, foliis distantibus patentibus integerrimis lobo superiori obovato acutiusculo subconcavo inferiori minuto lineari-obovato

plano adpresso, stipulis minutis bifidis, calyce demum laterali elongate stipitato obovato quinquialato tubo minutissimo coronato cæterum integerrimo.

HAB. New Zealand.

Patches creeping among other *Musci* on bark of trees, pale green. Stems one quarter of an inch long, branched. Leaves from a narrow base obovate, with obtusely angular tops, the lesser lobe not inflexed but lying flat on the upper, subacute. Stipules broad as the stems. The calyx is remarkable for its long naked footstalk, so that it entirely stands out of the perichætium; by which circumstance and by the flat, not incurved, lesser lobe, this is readily distinguished from the other *Lejeuniæ* of Sprengel.

(Fossombronia, *Nees v. Esenbeck*).

36. *J. pusilla*, L.

HAB. New Zealand.

(Diplolæna, *Nees v. Esenbeck*).

37. *J. xiphoides*, n. sp.; fronde implexa procumbente dichotoma uninervi lineari angusta margine dentata, calyce campanulato multi-partito.

HAB. New Zealand.

Patches loosely matted together for several inches in diameter, dark olive-green. Fronds two inches long, frequently simple, sometimes divided dichotomously, the nerve is opaque and has on either side the cells of the frond elongated, condensed and green so as to form a secondary nerve; the remaining part of the frond is largely cellular; the teeth at the margin are distinct, large and incurved. The calyx may be observed situated both where the nerve bifurcates in a dichotomous frond, and also on the nerve of a simple shoot, it is composed of five or six toothed laciniæ together forming a bell-shaped cavity, within which, in a barren state, a few linear, opaque, truncate pistilla may be seen.

The very narrow and toothed frond, as well as the nerves of two kinds, the one enclosing the other, will readily distinguish the present from *Jung. Hibernica*, Hook.

38. *J. cladorrhizans*, n. sp.; fronde implexa prostrata simplici ad apicem radicante lineari-acuminata margine undulata integerrima nervo percurrente, calyce duplici exteriori (seu perichætio) breviter squamoso squamis exterioribus dentatis interioribus laciniato-ciliatis interiori majori lineari-lanceolato acuminato ore parvo ciliato.

Hab. New Zealand, *Mr. Colenso.*

Patches loose wide, very pale green in the younger parts, pale olive in the older. Fronds a little more than an inch long, lanceolate, acuminate into an elongated point consisting almost entirely of the nerve, and radicating at the summit, and thence in the following season sending out new fronds. The nerve is whitish and stout though slender. The perichætium or outer calyx occurs at the base of the frond and on its inferior side, it is attached to the nerve; there are often three together, its exterior scales are rotund and deeply toothed, the interior scales are united at their bases, and have setaceous ciliæ which are jointed; from the centre of these issues the true calyx, large in proportion to the size of the frond, slightly bent upwards, pale flesh-coloured, its mouth laciniated, and the laciniæ elongato-ciliate.

This species approaches *Jung. Hibernica*, Hook. and *Jung. Lyellii*, Hook., from these, perhaps, it would be difficult to distinguish its barren fronds, but the calyces of the present arising from the under surface, themselves greater, curved and coloured and the more compound perichætia are marks of grave distinction.

39. *J. tenuinervis*, n. sp.; fronde tenui prostrata lineari dichotoma nervo gracili percursa margine dentata.

Hab. New Zealand, *Mr. Colenso.*

Fronds scarcely two inches long, pea-green, linear but slightly broader at their tops, where they are bilobate with a a very shallow sinus. The substance is thin, the cellules distinct, the nerve pale yellow, very slight and opaque, having on each side longitudinally a series of denser and greener cells than on the rest of the frond; the margin is furnished with distant but large teeth.

This is exceedingly like the British *Jung. Hibernica,* Hook., but its nerve is more slender, the dentation of the margin more distinct and pronounced, the substance of the frond thinner and its cells are more clearly defined.

(Symphyogyna, *Nees v. Esenbeck*).

40. *J. rhizobola,* Schwaeg. *Musc. Hep. Prodr. p.* 31.

HAB. New Zealand.

The fronds are less strongly marginated than represented in Hooker's *Musci Exot. t.* 87. Radicating shoots are not limited to the summits of the fronds, but sometimes are emitted from near the base.

41. *J. Hymenophyllum,* Hook. *Musc. Exot. t.* 14.

HAB. New Zealand.

42. *J. Phyllanthus,* Hook. *Musc. Exot. t.* 95.

HAB. New Zealand.

43. *J. leptopoda,* n. sp.; fronde erecta uninervi integerrima stipitata lineari supra ter dichotoma lobis latis summo apice bifidis.

HAB. New Zealand.

Fronds about one inch long, pale green, largely reticulated as in *Jung. furcata,* L. Roots long, branched, rather thick, here and there sending up upright fronds; the stipes or base of these is about half the length of the entire frond and may be considered as almost entirely composed of the nerve slightly winged at each side: at the first division the upper part of the frond is bent into a horizontal position; the division of the frond is at an acute angle; the lobes of one division usually overtop those of the adjoining; the nerve reaches to the very summit. *Jung. flabellata,* Hook., from the same country and which greatly resembles the present, has the stipes by no means winged, and the first division of the frond is into numerous lobes and not simply dichotomous.

(Aneura, *Nees v. Esenbeck*).

44. J. *multifida*, L.

Hab. New Zealand.

45. *J. alterniloba*, n. sp.; fronde tenui prostrata vage ramosa fusco-rufescenti lineari enervi alternatim lobata lobis brevibus apice rotundatis unisinuatis margine denticulatis.

Hab. New Zealand.

Fronds sparingly branched, crossing one another but scarcely matted together, about three inches long and two lines wide, of the colour of dried specimens of *Jung. multifida*, L., having a pinnate appearance from the short, alternate, obtuse lobes, each of which is truly bilobate at the summit with a very shallow sinus; the margin exhibits very minute teeth pointing in various directions. The substance of the frond is very thin, yet along the longitudinal axis it is carnose and has the cells indistinctly separated, which is by no means the case near the margin. Beneath, there are brownish-white rootlets limited to the central parts of the frond and its lobes.

This species belongs to the section of the genus with nerveless fronds. By the greater breadth and shortness of its lobes, as well as by the sinus at the summit of each, it is at once distinguished from the broadest specimens of *Jung. multifida*, L.

(Metzgeria, *Nees v. Esenbeck*).

46. *J. furcata*, L.

Hab. New Zealand.

47. *J. eriocaula*, Hook. *Musc. Exot. t.* 72.

Hab. New Zealand.

(Fegatella, *Cæsalpinus*).

48. *J. Australis*, n. sp.; receptaculo fœmineo disciformi corrugato vage crenato loculis subtribus, capsula sessili, pedunculo epiphyllo.

Hab. New Zealand.

Fronds nearly two inches long, linear-obovate, divided at the top by a shallow sinus, the margins elevated, scariose, purplish; the pores are excessively minute white elevations of the cuticle not visible in the dry state. Beneath the edge of the frond is a purplish, transversely corrugated cuticle; besides on each side of the inferior longitudinal axis is an imbricated series of lunulate purplish scales terminating in an oblique, lanceolate, colourless point. There are sometimes two or three female receptacles on the surface of the same frond ranged over the longitudinal axis. When the peduncle has grown up, the female receptacle is scarcely wider than the top of the peduncle, it is much wrinkled and has beneath one, two, or three large tumid hemispherical loculi opening vertically on the exterior side; the opening is marginate from an involution of the skin of the loculus. When there is but a single loculus, it appears to open upwards. No calyx is present. Capsule solitary, bursting irregularly at the summit, sessile within the loculus, and having around its base the remains of the calyptra. Seeds numerous, tawny, angulato-rotundate, having a transparent and cuticular coat, pitted and rugged, containing a smooth, sphærical nucleus. Spiral filaments with numerous very fine striæ. The scales of the indusium are linear, acuminate, whitish mottled with reddish purple. Sometimes the loculi open and the capsules discharge their seeds while the receptacle has not been raised up from its original sessile position on the frond. The peduncle has, anteriorly, like its European congeners, a single shallow groove running from top to bottom.

The position of the peduncle, not as in the other known *Fegatellæ* between the terminal lobes of the frond, but placed on its disk, is characteristic and distinctive.

FIMBRIARIA, *Nees v. Esenbeck.*

49. *F. Australis*, n. sp.; fronde lineari-obovata dichotoma elongata apice biloba margine purpurea scariosa undulata

integerrima, receptaculo fœmineo corrugato apice subgloboso basi quadrifido pedunculo supra subsquamato.

Hab. New Zealand, *Mr. Colenso.*

Fronds nearly two inches long, two or three times subdivided dichotomously, very narrow at the base, the younger or top subdivisions linear-obovate, flattish when moistened, the edges incurved when dry, pale green, having on the surface thickly set pores covered with a white elevated cuticle. Scales occur beneath the frond on each side of the midrib, parallel to which is the line of their insertion, they are semilanceolate, obtuse, fine purple except their summits which are destitute of colouring matter. The female receptacle has a conico-hemispherical summit, and divides below into four blunt lobes, each covering the base of a calyptra, the receptacle is every where rugged with wrinkled granular elevations. Each calyptra is obconical, acute, tipped with a style or its remains, white, opening by several longitudinal slits. There is no calyx. The capsule, much smaller than the calyptra, is globose and contains numerous large angulato-rotundate seeds, with spiral filaments scarcely twice as long as the diameter of the seeds. The peduncle is thicker and more opaque below, pellucid above, of a dusky brown, it has three longitudinal grooves, the anterior of which is the widest, deepest and most considerable. The male receptacle is an elevated lenticular disk, of a dusky purple colour, rough with the prominest cells in which the anthers are contained; these cells are very large and divided by whitish upright membranous partitions.

This species has the largest frond of any yet discovered; but the parts of fructification are disproportionately small. It differs from *Fimbriaria Drummondii*, Tayl. from Swan River, by its greater size, and more divided lobes, its smaller and more minutely corrugated female receptacles, by the absence of any purplish tinge in the calyptræ or on the scales of the indusium, by the fewness of the indusial scales, by the deeper situation of the peduncle and by the less conical female receptacle. It is remarkable that of this genus, which occurs at all latitudes in either hemisphere, not one species has been detected in the British Isles.

MONOCLEA, *Hooker*.

50. *M. leptohymenia*, n. sp.; fronde suborbiculari tenuissima prostrata segmentis ut plurimum apice bilobis rotundatis undulatis, calyce subulato basi curvato apice lacero.

HAB. New Zealand.

Fronds matted together, nearly two inches long, the lobes about one quarter of an inch wide; blackish-green when dry, the younger parts when moistened of a lively green; very thin; structure rather carnose, the reticulation very indistinct; in the moistened plant a few scattered glaucous cells are observable among the dusky olive ones of which the frond is principally composed. The fronds are dichotomously divided, the segments of no uniform outline, yet the bilobate termination is very common; the margins are entire or crenate in appearance only from their minute undulations, there is no midrib; beneath the frond and along the axis are numerous pale roots, which are particularly clustered below the calyx. The calyx rises, not from between the lobes as in the *Marchantiæ*, but from the upper surface of the frond and is in fact a continuation of the superior tegument of the frond, it is slightly curved as well as wider below, has a narrow jagged opening above, it envelopes one third at least of the linear receptacle on which the capsule is borne. The capsule is linear, opening on one side for its entire length, also a very little at the top on the opposite side; when ripe and dehiscent its margins are reflexed, within is the columella so fine a thread that it can only be seen with a magnifier, and even requires some expert manipulation for its exhibition. In the young state the seeds and spiral filaments are connected by a pale transparent membrane into a cylinder surrounding the columella: after maturity this membrane disappears; the seeds are numerous, angulato-rotund, to several I have seen attached a minute footstalk, probably the remains of an umbilical cord; the spiral filaments are much bent and contain a double helix. The calyptra at length is left surrounding the base of the receptacle within the calyx, it is subrotund, whitish and carnose.

The parts described shew the necessity of new modelling the characters of the genus *Monoclea:* it is very possible that from its extreme tenuity the columella escaped notice in the *M. Forsteri,* Hook. the original species on which the genus was founded. It is seen in *M. crispata,* Hook.

ANTHOCEROS, *Linn.*

51. *A. punctatus,* L.
HAB. New Zealand.

PELLIA, *Raddi.*

52. *P. carnosa,* n. sp.; fronde implexa prostrata atro-viridi vage lobata lobis elongate rotundatis vage crenatis planiusculis.
HAB. New Zealand.

Fronds nearly three inches long, from a narrow base linear-oblong, lobed, the segments of various lengths, their margin scariose, irregularly crenate; the central parts of the frond are thick, shining when moist, of a dark olive-green. No fructification was present.

As it would be very difficult to distinguish the European *Jung. calycina,* Tayl. from *J. epiphylla,* L. in a barren state; so the determination of the present plant as a new species is unsatisfactory without the aid of characters drawn from the fruit. Still the darker green fronds, with lobes less rounded and above all their crenate margins, would seem to justify a separation.

HYGROPILA, *Tayl. in Linn. Trans.*

52. *H. dilatata,* n. sp.; fronde oblonga tenuissima latissima lobata lobis rotundatis integerrimis.
HAB. New Zealand.

The determination is unsatisfactory, for no fruit male or female occurs on our specimens. The fronds, however, have quite the structure of our *Hygropila iniqua;* they are very thin, pellucid, of a lively green, the older somewhat dusky. No midrib is observable, but the rootlets beneath are clustered along the longitudinal axis of the lobes. The fronds are irregularly lobate, but the lobes in our specimens have not a sinus at their summits as in the other species of this genus.

Marchantia, *L.*

53. *M. polymorpha,* L.
Hab. New Zealand.

IV.—SPECIES TASMANIÆ.

JUNGERMANNIA, L.

(Gottschea, *Nees v. Esenbeck.*)

1. *J. Hombroniana,* Montagne *in Annales des Sciences Naturelles, Avril,* 1843.
Hab. Van Diemen's Land.

(Plagiochila, *Nees v. Esenbeck.*)

2. *J. abbreviata,* nobis ante, p. 374.
Hab. Van Diemen's Land.

3. *J. opisthotona,* n. sp.; caule cæspitoso erecto apice recurvato ramoso, ramis erectis, foliis arcte imbricatis erectis rotundatis hinc gibbosis illinc margine reflexis dentatis dente apicali majore, calyce terminali oblongo compresso truncato ciliato.
Hab. Van Diemen's Land.

Tufts wide, dusky olive-green. Stems about two inches high. Leaves clustered into a compressed capitulus at the top, which is bent back; each lower leaf is imbricated on at least one half of the one immediately above, erect, adpressed even in the moistened state, rotundate or very widely ovate, obtuse, with a remarkable tooth on the summit, both margins dentate; perichætial leaves longer and more upright than the cauline, closely adpressed to the base of the calyx which is three times their length. Perigonia in short slender spikes, usually terminal, of a brown colour, the leaves minute, tumid at the base and closely imbricated.

The *Plagiochila biserialis* of Lind. et Lehm., approaches nearest to our plant in habit, but is far more slender, has the leaves smaller, and their teeth larger.

4. *J. aculeata*, caule cæspitoso erecte ramoso supra fastigiato, foliis approximatis erecto-patentibus obovatis antice gibbosis apice subrotundis aculeato-dentatis, calyce demum axillari ex basi angusta late obconico subcompresso ore ciliato-dentato.

Hab. Van Diemen's Land.

Tufts wide, loosely entangled, dark olive-green, the upper branches numerous, erecto-patent, fastigiate, the lower patent. Stems three inches long. Leaves from a narrow base obovate, the anterior margin gibbous, the posterior straight, recurved, denticulation large towards the top of the leaf. Calyx but very little longer than the erect oval perichætial leaves, campanulate, compressed before the egress of the capsule, strongly dentato-ciliate. Perigonia short brownish spikes, usually terminal. Capsule oblong, short; pedicel scarcely longer than the calyx.

This species differs from the European *Jung. spinulosa*, Dicks., by the lesser size, more fastigiate habit, rounder leaves, by the calyx less exserted out of the perichætium, more campanulate and its mouth more strongly ciliate.

5. *J. pusilla*, Plagiochila pusilla, Mont. Voy. au Pol. Sud, t. 16, f. 3.

Hab. Van Diemen's Land.

6. *J. strombifolia*, n. sp.; caule cæspitoso adscendente subramoso, foliis imbricatis subpatentibus dimidiato-cordatis margine superiori decurrente revoluto integerrimo inferiori gibboso spinoso-dentato, calyce terminali obovato bilabiato labiis rotundatis dentatis.

Hab. Van Diemen's Land.

Tufts rather loose, pale olive. Stems two inches high, irregularly branched, branches erecto-patent. Leaves more crowded and secund towards the top of the shoot; they have their superior margin revolute, tumid and convex.

From the European *Jung. spinulosa*, Dicks., the present species is known by its smaller size, the close revolution of the superior margins of its leaves, the dimidiato-cordate figure of these, and by their larger cellules.

(Jungermannia, *L. Char. emendatus Neesii.*)

7. *J. colorata*, Lind. et Lehm.
HAB. Van Diemen's Land.
8. *J. subtrifida*, n. sp.; caule cæspitoso erecto subsimplici apice incrassato incurvo, foliis laxe imbricatis erectis secundis stipulisque concavis ovalibus bi-trifidis integerrimis.
HAB. Van Diemen's Land.

Tufts rather loose, pale brown. Stems nearly two inches high; branches few, slender, upright. Leaves loosely imbricated below, more closely towards the thickened summits of the stems, very tumid, the lower usually bifid, the upper trifid, the segments short, lanceolate, subapiculate.

This has the habit of *Jung. madida*, nobis, from Hermite Island, Cape Horn; the leaves, however, are far less numerous, less imbricated and more erect, while the trifid summits of the upper ones are very characteristic.

(Gymnanthe, *Tayl.*)

9. *J. tenella*, nobis ante, p. 377.
HAB. Van Diemen's Land.
10. *J. Urvilleana*, n. sp.; Plagiochila (Scapania) Urvilleana, *Mont.*, Voy. au Pol. Sud, t. 16, f. 2.
HAB. Van Diemen's Land.

(Lophocolea, *Nees v. Esenbeck.*)

11. *J. lenta*, nobis ante, p. 379.
HAB. Van Diemen's Land.

(Chiloscyphus, *Nees v. Esenbeck.*)

12. *J. sinuosa*, Hook. *Musc. Exot. t.* 113.
HAB. Van Diemen's Land.

13. *J. coalita*, Hook. *Musc. Exot. t.* 123.
HAB. Van Diemen's Land.

(Lepidozea, *Nees v. Esenbeck.*)

14. *J. glaucophylla*, n. sp.; caule implexo reptante pinnato, foliis subcontiguis patentibus convexis rotundato-quadratis quadrifidis segmentis acuminatis recurvis, stipulis oblongo-quadratis quadrifidis.
HAB. Van Diemen's Land.

Patches two inches wide, pale glaucous-green, thin, loose. Stems nearly two inches long, the branches subpinnate, patent. Leaves scarcely touching one another, on the young shoots distant; moistened and seen by transmitted light of a pale olive colour, but when dry more white and glaucous. Stipules oblong in their undivided part.

From *Jung. lævifolia*, Tayl., the present may be readily known by its whitish glaucous colour when dry, by the insertion of the leaves being nearly parallel with the stems, by the larger cells of the leaves, which too are flatter, by the larger and more oblong stipules and the greater size of the plant.

(Mastigobryum, *Nees v. Esenbeck.*)

15. *J. Novæ-Hollandiæ*, Nees.
HAB. Van Diemen's Land.

(Radula, *Nees v. Esenbeck.*)

16. *J. buccinifera*, n. sp.; caule implexo prostrato ramoso, ramis patentibus, foliis subimbricatis patentibus integerrimis lobo superiori obovato-rotundato convexiusculo inferiori minuto trapezoideo adpresso, calyce demum axillari ex angusta elongata basi obconico subcompresso truncato.
HAB. Van Diemen's Land.

Patches wide, dusky olive-green. Stems about one inch long, with numerous, alternate, erecto-patent branches. Leaves smaller on the inferior part of the stem and there not touching one another, subimbricated above, the perichætial pair are erect and oblong. The footstalk of the calyx stands out of the perichætium and is taper, the upper part is shaped like a trumpet or elongate and obconical, the mouth is compressed before the egress of the capsule, the margin uneven, but not toothed. The capsule is cylindrical, its peduncle about three times its own length.

From the *Jung. complanata*, L. the present is distinct by the long footstalk to the calyx, by the smaller size of the plant, its duskier green colour, by the rounder leaves, which, too, are less imbricated.

(Frullania, *Nees v. Esenbeck.*)

17. J. *Magellanica*, Lamarck, *Encycl. Bot. v.* 3, *p.* 28.

HAB. Van Diemen's Land.

18. *J. falciloba*, n. sp.; caule prostrato implexo pinnato, ramis erecto-patentibus, foliis imbricatis patentibus convexis integerrimis lobo superiori rotundato-oblongo apice brevissime bifidis margine recurvis, calyce ex angusta basi obovato supra lævi infra tumide uniplicato apice tubo minuto coronato.

HAB. Van Diemen's Land.

Patches wide, reddish-rusty brown. Stems three inches long, alternately branched; the branches bearing calyces shorter and more tumid. Leaves convex, closely imbricated. Perigonia are short obtuse spikes, sometimes almost round.

The curved tubular tops of the lesser lobes reach below the inferior margin of the upper lobes, which is a very distinctive mark, coupled with the short perigonia.

(Symphyogyna, *Nees v. Esenbeck.*)

19. *J. obovata*, n. sp.; fronde stipitata erecta dichotoma lobis obovatis tenuibus uninerviis margine dentatis, calyce in nervum subtus frondem insidente squamoso squamis laciniatis, calyptra lineari elongata.

HAB. Van Diemen's Land.

Fronds furnished each with its own roots, pale green, or pale tawny by age, on alate footstalks, once or twice dichotomous, the lobes oblong, rounded, deeply dentate, having a very shallow sinus at the tops; their substance is thin, the cellules very distinct. Calyx situated towards the base of the frond, on the under side of the nerve, having three or more laciniated scales, from the bosom of which rises the linear elongated calyptra bearing pistilla on its summit. Capsule large, conspicuous, cylindrical, splitting with the tops of the valves at first cohering; spiral filaments very long, bent, often twisted together, capsule one tenth of an inch long. On distinct individuals are perigonia of numerous, imbricated, convex, dentate scales. From *J. Hymenophyllum*, Hook., ours is distinct by the stipes rising at once from the ground, the wider and more dentate lobes.

(Metzgeria, *Nees v. Esenbeck.*)

20. *J. furcata*, L.
HAB. Van Diemen's Land.

MARCHANTIA, *L.*

21. *M. polymorpha*, L.
HAB. Van Diemen's Land.

Notes on the BOTANY *of the* AZORES. *By* HEWETT C. WATSON, *Esq.*

(*Continued from page* 125 *of Vol. II.*)

After returning from the Azores, about two years ago, I addressed some letters to the *London Journal of Botany*, as notes of the general impressions retained from my botanical walks on the islands of Fayal and Pico. It was my wish to have continued the notes, by next describing visits to Flores and Corvo, the two most westerly islands of the group. My sketches of Azorean Botany would then have been concluded appropriately by a general list of the species collected on the four islands. It was considered that such an enumeration would give the opportunity for filling up blanks in names, and for correcting any errors of nomenclature, which might be found in the earlier notes, partly written before my collection had arrived in England, or could be submitted to proper examination.

My progress was arrested, when I learned that a list of the plants collected in the same islands, by Messrs. Hochstetter and Guthnick, in 1838, had been published in Weigmann's *Archiv.* (1843); and likewise, that a more complete *Flora Azorica* was in course of preparation, by botanists much better qualified for the work than I could pretend to be. To have still proceeded with my own notes and list, under these circumstances, must have led to an inconvenient double naming of all the undescribed species which had been gathered by both parties; though the right of priority clearly belonged to Messrs. Hochstetter and Guthnick, whose collections were made four years earlier than mine, and had been distributed with names on their labels.

The expected *Flora Azorica* is now before the public, from the pen of M. Seubert, and it has just (September, 1844) reached my hands. This work, with upwards of a hundred Azorean specimens, sent by Guthnick to Sir W. J. Hooker, includes all that I have been able to see relating to their observations and collections in the islands. It appears that M. Hochstetter visited all the four small Westerly islands, on which I was enabled to land; as likewise the two principal islands of the group, Terceira and San Miguel, which were not seen by myself. M. Guthnick was his companion on four of the islands. Altogether, six of the islands have been examined partially, and three others apparently remain still unexplored by botanists. The *Flora Azorica* is a catalogue of the species found by Hochstetter and Guthnick on the six islands, with some few additional species, either published in other works, or incidentally mentioned in my former notes.

As might be expected, from the superior facilities enjoyed by two travellers who lived on shore, and who visited more and larger islands, their collections include many species which do not occur in mine. On the other hand, it seems that I have brought home many species which were not seen by the two travellers. Thus, neither the valuable work of Seubert, nor a list of the species in my own herbarium, taken apart, will afford a full catalogue of Azorean plants, so far as known. Accordingly, I now propose to make a nearer approximation to a complete Azorean Flora by here combining the two lists into one. The distinctions of the two collections may be easily kept up, by prefixing the Nos. from the *Flora Azorica*, within brackets (1), equally with the Nos. 1, 2, 3, &c., written on the labels distributed with my own specimens. Those species which appear to have been brought in one of the collections only, will be known by the substitution of a blank line, "—" or "(—)" in place of a No.

In enumerating the species, it will be more convenient to adapt the arrangement to my own Nos. which begin with the *Ranunculaceæ;* although they will not appear to have been placed in the best Natural Arrangement. Almost immediately on getting my specimens to England, I was applied to, for sets of them, by two eminent botanists, who were particularly interested in the productions of the Atlantic Islands. This induced me very hastily to put the almost unexamined specimens into something like a natural series, that the Nos. on the labels might correspond in each set, and follow in regular order. The interruptions to natural affinity which have arisen from this circumstance, are not so great as to render any re-arrangement necessary. I had hoped to receive the opinions of both the botanists alluded to, in reference to several of the then undescribed or dubious species. From one of them, Dr. C. Lemann, I have obtained much valuable information, as also many illustrative specimens gathered by him in Madeira. Unfortunately for the accuracy of my list, I have not been equally successful in obtaining the corrections of P. B. Webb, Esq., which were greatly wished for.

In the following list, the first Nos. will correspond with those on the labels distributed with my own specimens. The second Nos. inclosed ( ) will refer to the *Flora Azorica.* Following the names of the plants, I give those of the islands on which they were collected by myself. In the case of species not found by myself, the names of the islands (with very few exceptions) are omitted, but may frequently be ascertained from the pages of the *Flora Azorica.* Where it appeared necessary or desirable, I have added some notes on the characters of the species, &c. For the convenience of foreigners, these notes are mostly in Latin; but having scarce ever written that language since leaving school, twenty years ago, it will be found "as *bad* as can be expected."

It may be proper here to remark, that some few of the names in the Notes formerly printed, will now require to be changed; and hence it may be well for any botanist, who feels interested in the plants of the Azores, to observe whether the same specific appellation is still retained in the following list. *Holcus mollis,* of my Notes, for example, is properly described as a new species in the *Flora Azorica,* under the name of *Holcus rigidus;* and the former name must consequently be erased, as applying to a species which has not been found in the Azores.

Catalogue of Azorean Plants.

✓ 1 (305). Ranunculus *cortusæfolius,* Willd. Fayal.
By Seubert this plant is named *R. cortusæfolius,* var. *sylvestris* (Webb and Berth.), and *R. grandifolius* (Lowe) is quoted as a synonym. My single specimen of Lowe's plant, collected in Madeira by Dr. C. Lemann, differs considerably from all those of Fayal.

✓ 2 (304). R. *repens,* L. Fayal; Pico.

✓ 3 (306). R. *trilobus,* Desf. Flores. (Inter Caladia.)

✓ 4 (307). R. *muricatus,* L. Fayal. (Uno loco.)

✓ 5 (308). R. *parviflorus*, L. Fayal; Pico.

✓ — (309). Nigella *arvensis*, L.

✓ — (311). Delphinium *Consolida*, L.

✓ 6 (310). Aquilegia *vulgaris*, L. Pico. (Indigena?)

✓ 7 (—). Papaver *dubium*, L. Fayal; Flores.

✓ — (312). Chelidonium *majus*, L.

✓ 8 (313). Fumaria *capreolata*, L. Fayal; Flores.

Varietas minor, floribus purpurascentibus, pedicellis patentibus. Æque ut in forma typica (pedicellis recurvis) petalon inferius ad apicem parum dilatum vel amplius est.

✓ — (314). F. *officinalis*, L.

A priore facile distinguenda hæc species apice petali inferioris dilato et suborbiculari. In insulis non vidi.

✓ 0 (315). Matthiola *annua*, Sweet. Fayal. (Aliena.)

✓ — (—). Cardamine *hirsuta*, L.

"The Banksian Herbarium contains specimens of *C. hirsuta*, collected by Masson, in San Miguel."—Dr. C. Lemann.

✓ 9 (318). C. *Calderarum*, Guth. Ins. omnibus.

✓ 10 (317). Nasturtium *officinale*, Br. Fayal; Flores.

✓ — (316). N. *flexuosum*, Seubert.

✓ 10 bis. (—). Barbarea *præcox*, Br. Fayal. (Aliena?)

✓ 11 (—). Sisymbrium *officinale*, Scop. Fayal; Flores.

✓ 12 (322). Sinapis *nigra*, L. Fayal; Flores.

✓ 13 (—). Rapistrum *perenne*, Berg. Fayal.

The Fayal specimens differ from those of Madeira, by their shorter styles and the lower joint of the silicle being reduced into a slender pedicel to the upper.

✓ 14 (—). Raphanus *Raphanistrum*, L. Fayal; Flores.

The Azorean specimens have smaller and more distinctly moniliform pods than those of England.

✓ 15 (—). Cakile *maritima*, Scop. Fayal.

Varietas, siliculæ articulo superiore ovato, apice emarginato; inferiore sæpius seminifero.

✓ 16 (321). Lepidium *Virginicum*, L. Fayal.
✓ 17 (323). Senebiera *pinnatifida*, DC. Fayal.
✓ — (319). Alyssum *maritimum*, L.
✓ 18 (—). Reseda *Luteola*, L. Fayal; Flores.
Varietas, foliis undulatis, petalis quatuor, inferiore trifido.
✓ — (324). R. *macrosperma*, Rchb.
✓ 19 (325). Viola *odorata*, L. Fayal; Flores. (Aliena?)
✓ 20 (—). V. *palustris*, L. Flores; Pico.
✓ 21 (344). Polygala *vulgaris*, L. Pico.
✓ 22 (327). "Frankenia *ericifolia*, Ch. Smith." Corvo.
✓ 23 (326). F. *pulverulenta*, L. Fayal; Flores?
✓ 24 (336). Silene *Gallica*, L. Fayal; Flores.
✓ 25 (335). S. *maritima*, With. Flores. (*S. inflata*, Flo. Azor.)
✓ 26 (333). Cerastium *Azoricum*, Hochst. Flores; Corvo.
✓ 27 (334). C. *vulgatum*, L. Fayal; Flores.
✓ 28 (—). C. *viscosum*, L. Fayal; Flores?
✓ 29 (—). Stellaria *media*, With. Fayal; Flores.
✓ 30 (—). Arenaria *rubra*, L. Fayal; Flores.
✓ 31 (322). "A. *macrorhiza*, Req." Fayal; Pico.
✓ 32 (331). Sagina *procumbens*, L. Fayal; Flores.
✓ 33 (—). Elatine *hexandra*, DC. Flores.
✓ 34 (337). Lavatera *sylvestris*, Brot. Fayal; Flores.
✓ 35 (338). Malva *rotundifolia*, L. Fayal.
✓ 36 (—). M. *parviflora*, L. Fayal.
✓ 37 (339). Sida *rhombifolia*, L. Fayal; Flores.
In locis calidioribus juxta urbes; an vere indigena?
✓ 38 (343). Hypericum *foliosum*, Ait. Fayal; Flores; Pico.
Sect. 1. Ascyreia. Chois.—DC. prodr. Ramis (pallidis) teretibus subdipteris, foliis (lætevirentibus) decussatis sessilibus ovato-oblongis: superioribus sæpius majoribus subovatis amplexicaulibus acutiusculis, sepalis oblongo-lanceolatis acutis in fructu primum reflexis deinde caducis, capsulis ovatis in stylos persistentes attenuatis.

Hab. in montibus insularum plurium, in Flores frequentissime. *Hypericum grandifolium*, Choisy. *Androsæmum Webbianum*, Spach. The fruit of this species has little resemblance to the baccate fruit of *Androsæmum officinale*, and connects it more closely with *H. perforatum* and our other herbaceous species. Even if the generic name of *Androsæmum* should be adopted for it, there appears no good reason for setting aside two earlier specific names, as done by Spach. Mr. Webb's services to science will not be the less valued and known for the loss of a trivial name. The above diagnosis is drawn from the dried specimens brought home, aided by living plants in my garden raised from their seeds. The characters of *H. grandifolium* and *foliosum* are completely united in the same plant; and Dr. C. Lemann has assured himself of the identity of the two supposed species, by examining an original specimen in the Banksian herbarium. The differences of size and shape in the upper leaves, is sometimes very decided; but in other instances, it is less evident: and such discrepancies occur in other allied species.

J 39 (—). Hypericum *decipiens*, H. Wats. ms. Flores; Fayal?

Sect. 4. Perforaria, Chois.—DC. Prodr. Herbacea, nigro-punctata, caule erecto tetraptero ramoso, foliis pellucido-punctatis oblongis obtusis retusisve, floribus laxe paniculatis, sepalis lanceolatis acutis, stylis tribus divaricatis ovario longioribus. Corolla lutea (minime citrina), extrinsecus rubicunda. Folia caulina sæpius reflexa margine undulata. Caulis, folia, calyx, corolla, antheræ nigro-punctati. This is extremely near *H. quadrangulum*, (Linn.—Auct. Brit.) though instantly distinguished by its deeper coloured and less crowded flowers; and if the tetrapterous stem were not observed, it would more likely be called *H. perforatum* by a British botanist. Still, if it be correct to include *H. dubium* and *maculatum* under *H. quadrangulum*, this also may be added to the assemblage. Dr. Lemann suggested the variety "*undulatum*" of DC. Prodr. 2.548; but the only character of that variety "foliis margine undulatis" applies to some specimens of *H. dubium* and of the ordinary *H. quadrangulum* of Britain. Probably this is the same as *H. perforatum* of the *Flora Azorica*, which is stated to occur, "ubique in lapidosis collinis," yet was not found by me. My flowering specimens of *H. decipiens* were collected on damp rocks, exposed to the sun, in Flores; and I possess what is apparently the same species, though destitute of flowers, collected in Fayal. It has been sent to the Botanical Society of London, from San Miguel, by J. C. Hunt, Esq., British Consul there. In my garden, even in dry ground, it is a much finer plant than the British *H. quadrangulum*, which grows in wet ground.

✓ — (340). H. *perforatum*, L. (Vide præcedentem).
✓ 40 (341). H. *humifusum*, L. Fayal; Flores; Pico.
✓ 41 (350). Geranium *Robertianum*, L. Fayal; Flores.
✓ 42 (—). G. *molle*, L. Fayal.
✓ — (349). G. *dissectum*, L.
✓ 43 (348). Erodium *malachoides*, Willd. Pico.
✓ 44 (351). Oxalis *corniculata*, L. Fayal; Flores.
✓ — (—). O. *purpurea?* (St. Michael—J. C. Hunt, Esq.)
✓ — (317). Ruta *bracteosa*, DC.
✓ 45 (345). Ilex *Perado*, Ait. Fayal; Flores.
✓ 46 (346). Rhamnus *latifolius*, Herit. Fayal; Flores.
✓ 47 (—). Rhus *Coriaria*, L. Flores; Pico. (Aliena.)
✓ 48 (364). Spartium *junceum*, L. Fayal; Flores. (Aliena.)
✓ 49 (365). S. *scoparium*, L. Fayal; Flores; Corvo. (Aliena?)

50 (387). Lathyrus *Aphaca*, L. Fayal; Flores; Pico.

51 (389). L. *tingitanus*, L. Fayal. (Indigena?)

52 (389). L. *sativus*, L. Fayal. (Aliena?)

53 (—). L. *articulatus*, L. Fayal.

— (383). Ervum *Lens*, L.

54 (—). E. *monanthos*, L. Fayal.

55 (385). Vicia *sativa*, L. Fayal. (Et quoque var. *angustifolia*.

56 (386). V. *albicans*, Lowe. Fayal.

57 (384). V. (Ervum) *gracilis*, Lois. Fayal.

58 (—). V. (Ervum) *hirsuta*, Koch. Fayal; Flores.

59 (369). Melilotus *parviflora*, Desf. Corvo.

60 (370). Trifolium *angustifolium*, L. Fayal.

61 (—). T. *arvense*, L. Fayal; Flores.

62 (371). T. *Ligusticum*, Balb. Fayal; Flores.

— (372). T. *lappaceum*, L.

63 (376). T. *repens*, L. Fayal; Flores.

64 (375). T. *glomeratum*, L. Fayal; Flores.

65 (374). T. *suffocatum*, L. Pico.

66 (373). T. *scabrum*, L. Fayal.

67 (377). T. *procumbens*, L. Fayal.

68 (—). T. *filiforme*, L. Fayal; Flores.

— (382). Lotus *corniculatus*, L.

69 (382*a*). L. *major*, Scop. Fayal; Flores.

— (381). L. *Creticus*, L.

70 (380). L. *angustissimus*, L. Fayal; Flores.

70$^{\text{bis}}$ (379). L. *hispidus*, Desf. Fayal; Flores.

71 (378). L. *parviflorus*, Lamarck? Fayal.

This plant is so extremely like *Lotus hispidus*, except in its dwarf stature and in its short legumes which scarcely exceed the calyx, that I had first mingled the specimens of the two. Afterwards, observing that Mr. Guthnick had labelled his similar specimens "*Dorycnium parviflorum*," and that a Madeira specimen, still apparently identical, had been sent to me likewise under this name, I was induced to change the number on the labels of the larger specimens, and the name on those of the smaller. Now, I see that Seubert also has referred the specimens of Guthnick to *L. hispidus*. Is this correct?

✓ — (366). Medicago *lupulina*, L.

✓ 72 (367). M. *denticulata*, Willd. Fayal. (*M. lappacea*, Fl. Az.)

✓ — (368). M. *pentacycla*, DC.

✓ 73 (391). Ornithopus *perpusillus*, L. Corvo. (*O. roseus*, Fl. Az.)

✓ 74 (390). Arthrolobium *ebracteatum*, DC. Fayal; Flores.

75 (—). Prunus *Cerasus*, L. Fayal. (Aliena?)

Two bushes only were observed, in a plantation of Pines. They could scarcely be supposed indigenous, although I did not see either this species, or *P. Avium*, in the gardens of Fayal.

✓ 76 (356) Rubus *Hochstetterorum*, Seub. Fayal; Flores; Pico.

My No. 77 is apparently a smaller form of the same species.

✓ 78 (355). R. *fruticosus*, L. Fayal.

✓ 79 (357). Fragaria *vesca*, L. Fayal; Flores; Pico.

✓ — (360). Potentilla *anserina*, L.

✓ — (361). P. *reptans*, L.

✓ 80 (358). P. *Tormentilla*, Schrank. Fayal; Flores; Pico.

Varietas *reptans* seu *nemoralis* (Flo. Az. 359) in montibus sparsim occurrit.

✓ 81 (362). Agrimonia *Eupatorium*, L. Fayal.

✓ — (363). Poterium *Sanguisorba*, L.

✓ 82 (—). Alchemilla *arvensis*, Lam. Fayal.

✓ 83 (—). Epilobium *parviflorum*, Schreb. Flores.

✓ 84 (166). Callitriche *verna*, L. Fayal; Flores; Pico.

✓ 85 (—). Ceratophyllum *demersum*, L. Flores.

✓ — (353). Lythrum *Graefferi*, Ten.

✓ 87 (354). L. *hyssopifolium*, L. Fayal; Flores; Pico; Corvo.

My No. 86 appears nothing more than a luxuriant form of this species; though it was labelled either "*L. Graefferi*" or "*L junceum.*"

✓88. (—). Peplis *Portula*, L. Fayal; Pico.

✓ 89. (328). Portulaca *oleracea.* L. Fayal; Flores; Pico.

✓ 90 (330). Polycarpon *tetraphyllum*, L. Fayal; Flores.

✓ — (329). Illecebrum *verticillatum*, L.

✓ 91 (303). Umbilicus *pendulinus*, DC. Fayal; Flores.

✓ 92 (302). Tillæa *muscosa*, L. Fayal; Flores; Pico.

✓ 93 (301). Hedera *Helix*, L. Fayal; Flores.

Var. *Hibernica*, foliis amplioribus, anglice "Irish Ivy."

✓ 94 (—) ?Melanoselinum *decipiens*, Hoffm. Fayal.

Of this I brought two leaves only, which were taken from a young specimen without flowers, in the Caldeira of Fayal. They closely resemble the foliage of the Madeira plant; but may belong to some other umbelliferous species.

✓ 95 (293). Sanicula *Azorica*, Guth. Fayal.

"*S. ciliata*, Solander ms. in Herb. Banks." C. Lemann. *S. ciliaris*, Herb. Smith.

✓ 96 (—). Crithmum *maritimum*, L. Flores; Corvo.

✓ 97 (297). Fœniculum *vulgare*, Gaert. Fayal; Flores.

✓ 98 (300). Torilis *infesta*, Hoffm. Fayal. ("T. Helvetica.")

✓ 99 (299). "Daucus *polygamus*, Gouan." Fayal; Flores.

My specimens are young and imperfect.

✓ 100 (—). Umbellifera. Pico.

E speciminibus fructu carentibus, floribusque parvis et in desiccatione tarda mucidis, genus dubium. Herba glabra. Fibrillæ radicis attenuati paucæ. Caulis ramis divaricatis dichotomus. Petioli alati. Foliola foliorum biternatorum ovata, serrata, ad basin sæpius inæqualia; radicalium biternato-pinnatorum ad basin cordata. Pedunculi foliis oppositi. Involucrum nullum. Involucellum polyphyllum. Calyx—? Petala apice inflexa. Fructus—? Hab. ad vias prope litus insulæ Pico.

[illegible] [illegible], [illegible], Wats. Lond. J. [illegible] vi. 387

✓101 (—). Apium *graveolens,* L. Flores; Pico.

✓102 (—). Chærophyllum *aromaticum,* L.? Flores.

Some doubt attaches to the specific name of this plant. The leaves are deeply inciso-serrate and curled; thus bearing some resemblance to those of *Mentha crispa* or the *Curled Parsley* of the gardens. The *Chærophyllum* was seen in one locality only, plentiful there, yet possibly introduced.

✓103 (—). Petroselinum *trifoliatum,* H. Wats. ms. Flores.

Caule erecto striato, petiolis vaginantibus, foliis ternatis biternatisve, foliolis sæpius basi inæqualibus: inferiorum ovatis acutis serratis: superiorum lanceolatis subintegris, involucri foliolis lineari-lanceolatis integerrimis, involucelli lanceolatis. Herba annua seu biennis, glabra, tripedalis, dichotome ramosa. Pedunculi foliis oppositi vel terminales. Corolla parva alba. Hab. in rupibus prope urbem Santa-Cruz, in insula Flores; alibi non visa.

✓— (294). P. *sativum,* Hoffm.

✓— (295). Helosciadium *nodiflorum,* Koch. var. ochreatum, DC.

✓— (296). Pimpinella *dichotoma,* L.

The habitat, "in apricis pr. litus insulæ Pico," suggests a probability of my No. 100 being intended under this name.

✓— (298)? Kudmannia *Sicula,* DC.

✓104 (—). Sambucus *nigra,* L. Fayal; Flores. (Aliena.)

✓105 (239). Viburnum *Tinus,* L. Fayal; Flores; Corvo.

On the shrubs of this species, so frequent in English gardens, the young leaves only have the midrib beneath and the margins fringed with hairs, which are perhaps glandular. The older leaves are glabrous, with the exception of some pubescent tufts in the axillæ of the principal veins: as is the case also with the Azorean specimens; the foliage of the latter being more obtuse and coriaceous than those of our garden shrubs. It is unnecessary for authors to make a variety, and much less a species, from such differences.

✓ 106 (237). "Rubia *splendens*, Hoffmansegg." Fayal; Flores.

Foliis senis-octonis lineari-obovatis apiculatis supra glaberrimis: costa paginæ inferioris marginibusque reflexis cum caulibus angulatis retrorsum aculeato-scabris, pedunculis axillaribus, corollæ lobis acuminatis. A *Rubia tinctorum* videtur satis diversa.

✓ 107 (238). Sherardia *arvensis*, L. Fayal; Flores.
✓ 108 (235). Galium *Aparine*, L. Fayal.
✓ 109 (234). G. *palustre*, L. Flores.
✓ 110 (236). G. *anglicum*, Huds. Fayal; Flores; Pico.
✓ — (233). G. *Mollugo*, L.
✓ 111 (—). Fedia *dentata*, Vahl. Pico.
✓ 112 (194). Scabiosa *nitens*, R. & S. Flores; Corvo.

Herbacea, foliis lanceolato-oblongis serratis lucidis glabris in petiolum alatum (spurium) piloso-ciliatum attenuatis: superioribus lanceolatis laciniato-serratis, pedunculis longissimis, corollis quinquefidis radiantibus involucrum (haud semper) excedentibus. "Quoad fructum non satis nota." DC. Prodr. My specimens are only just coming into flower; but the above character so nearly unites the imperfect descriptions of *S. nitens* and *S. neglecta*, that I am disposed to think they will prove to be one species.

✓ — (195). S. *neglecta*, Hornem. (Forma præcedentis?)
✓ 113 (—). Campanula *Vidalii*, H. Wats. (Hook. Icon. 684.) Flores.
✓ 114 (232). C. *Erinus*, L. Fayal; Flores.
✓ 115 (286). Erica *scoparia*, L.
✓ 115 (287). E. *Azorica*, Hochst. Fayal; Flores; Pico.

Seubert distinguishes the latter of these two by its arborescent stem, shorter sepals, &c. I am not prepared to say whether those characters are sufficiently clear and constant to become a specific diagnosis. While collecting in the islands, I recognized only a single species. As to green or reddish flowers, they may be seen on different sides of the same bush.

✓ 116 (288). Calluna *vulgaris*, Salisb. Fayal; Flores; Pico.

✓ 117 (289). Menziesia *Daboeci*, DC. Fayal; Pico.

✓ — (290). Vaccinium *Maderense*, Link.

✓ 118 (292). V. *cylindraceum*, Sm. Fayal; Flores; Pico.

V. longiflorum, Wickstr. (Flora Azorica, No. 291), videtur esse varietas parviflora. Frutex azorica, interdum fere arborescens, omnino convenit cum *V. Maderense*, forma et magnitudine foliorum, bracteis foliaceis, et quoque calycis dentibus, qui nunc breviores et obtusi, nunc longiores et acuti, apparent. Differt præcipue racemis elongatis, et corollis sæpius multo longioribus, campanulato-cylindricis, sed non vere cylindricis. Magnitudo coloresque florum valde variant.

✓ 119 (241). Olea *excelsa*, Ait. Fayal; Flores. (Aliena?)

✓ — (—)? Jasminum *Azoricum*, L. (In Azoricis ignotum.)

✓ 120 (242). Asclepias *fruticosa*, L. Fayal. (Aliena).

✓ — (243). Exacum *filiforme*, Willd.

✓ 121 (244). Erythræa *Centaurium*, Pers. Fayal; Flores.

✓ 122 (245). E. *Massoni*, Sweet. Fayal; Flores; Pico.

Caule tetragono a basi perenne ramoso humifuso, ramis floriferis ascendentibus elongatis uni multifloris, foliis plus minusve ellipticis oblongisve: superioribus distantibus acutiusculis, corollæ tubo limbi lobos ellipticos obtusos et sub anthesi calycem subæquante. Corolla alba. "*Chironia maritima*, Ait. Hort. Kew, 2 ed, 2, 6—nec Willd." Herb. Smith, spec. ex Azoricis. "E. *diffusa*, Woods." Varietas *minor* seu *montana*. Ramis sterilibus humifusis, floriferis in pedunculos ascendentes

bracteatos uni-trifloros elongatis, foliis inferioribus spathulato-ellipticis, corollæ tubo limbum calycemque paulo superante. Hab. in montibus frequens; fortasse pro forma typica habenda.

Varietas *major* seu *maritima*. Ramis sterilibus subnullis, floriferis ascendentibus tri-multifloris, foliis subrotundis oblongisve crassiusculis, corollæ tubo limbum calycemque æquante. Hab. in rupibus maritimis insulæ Flores, atque ab oris versus montium radices sparsim ascendens.

Subvarietates occurrunt, ex. gr. caule (primi anni?) simplici erecto—foliis plus minus ovatis—calyce corollæ tubum superante—petalis bifidis, &c. It is almost impossible to frame a diagnosis for a species so very variable, and which might readily be split into half a dozen such book-species as those which have been carved out of the Linnean *Chironia Centaurium*.

✓ 123 (262). Convolvulus *arvensis*, L. Fayal. (Floribus albis.

✓ 124 (263). C. *sepium*, L. Flores.

✓ 125 (—). C. *Imperati*, Vahl. Fayal.

Perennis, glabra. Caulis repens, ramosus. Folia carnosa, petiolata, cordato-oblonga, panduriformia, vel tri-quinquelobata, lobo terminale majore, obtusissima vel emarginata, apiculata. Pedunculi uni-biflori, in medio bracteati. Sepala acuta vel acuminata. Stylus simplex. Stigma capitatum bilobum. Corolla alba, magna. Fructus——? Hab. in litore arenoso, ad Porto Pimo, prope urbem Horta, in insula Fayal; atque arenarum mobilium spatia ampla caulibus repentibus dense occupans. The characters of *C. Imperati* fit my plant pretty well. Whether or no it is one of the varieties of *C. littoralis*, Linn., may be questioned.

✓ 126 (256). Heliotropium *Europæum*, L. Pico.

✓— (257). Echium *violaceum*, L.

✓— (258). E. *vulgare*, L.

✓— (259). Myosotis *stricta*, Link.

✓— (260). M. *versicolor*, Pers. Syn.

✓127 (261). M. *maritima*, Hochst. Pico.

Caulis erectus. Pedicelli approximati. Calyx in lacinias lineari-oblongas fere ad basin divisus. Species annua, inter Europæas *M. arvensi* proxima, sed satis distincta. Speciebus paludum valde dissimilis; igiturque animadversio "proprius accedit ad *M. cæspitosam*, Schultz" iniqua comparatio est. In cæteris a cl. Seuberto descriptio sat bona.

✓128 (—). M. *Azorica*, H. Wats. In Bot. Mag. 1844 t. 4122. Flores; Corvo.

Species pulcherrima, floribus numerosis indigoticis; ab Europæis distinctissima.

✓129 (248). Mentha *rotundifolia*, L. Fayal; Flores.

✓130 (247). M. *viridis*, L. Flores.

✓131 (—). M. *sativa*, L.? Flores.

✓132 (—). M. *aquatica*, L.? Fayal; Flores.

I cannot apply names to some of these *Menthæ* (131-2) with any confidence of accuracy. Among more attractive objects, the species of this genus were too much neglected.

✓133 (—). M. *Pulegium*, L. Insulis omnibus.

My No. 134 is probably a subglabrous variety of No. 133, but the flowers are wanting.

✓135 (252). Calamintha *officinalis*, Moench. Fayal; Flores.

Variat foliis minoribus serratis acutis cum pubescentia breviore, et foliis crenatis obtusis cauleque villosioribus ("*villosissima* Benth." Flo. Azo. No. 252.)

✓136 (251). Thymus *micans*, Lowe. Fayal; Flores; Pico.

Variat calyce subregulari, id est, labio utroque in dentes duos profunde diviso.

✓137 (—). Clinopodium *vulgare*, Sm. Flores. (Corolla alba.)

✓ 138 (—). Melissa *officinalis*, L. Flores. (Aliena ?)

✓ — (250). Origanum *Creticum*, L.

✓ 139 (—). O. *virens*, Link. (teste cl. Lemann). Flores. An species unica, sub numeris "(251)" et "139"? Floresiana cum specie Maderense omnino convenit.

✓ 140 (254). Stachys *arvensis*, L. Fayal; Flores.

✓ 141 (253). Prunella *vulgaris*, L. Fayal; Flores; Pico.

✓ 142 (246). Lavandula *Stœchas*, L. Fayal. (Aliena.)

✓ 143 (—). Rosmarinus *officinalis*, L. Fayal. (Aliena.)

✓ — (270). Lycopersicum *esculentum*, Dun.

✓ 144 (269). Solanum *pseudocapsicum*, L. Fayal; Pico.

✓ 145 (268). S. *nigrum*, L. Fayal; Flores.

✓ 146 (—.) S. *villosum*, Lam. Flores.

✓ 147 (267). Physalis *pubescens*, L. Fayal; Flores.

✓ 148 (266). Hyoscyamus *Canariensis*, Ker. Fayal; Pico.

✓ 149 (—). Verbascum *Thapsus*, L. Fayal. (Aliena ?)

✓ 150 (275*) Sibthorpia *Europæa*, L. Fayal; Flores.

✓ — (281). Euphrasia *officinalis*, L.

✓ 151 (280?). E. *Azorica*, H. Wats. ms. Flores; Corvo. Herbacea, annua? Caulis teres. Rami sulcati obtuse tetragoni. Folia triangulari-ovata, acuta; pagina superior rugulosa vel scabrida; pagina inferior rugosa cum maculis verrucæformibus dense piliferis. Corolla alba (non purpurascens) macula duplici ampla intus variegata. In cæteris cum descriptione *E. grandifloræ*, Hochst. (Flo. Azo. No. 280) optime convenit. Hab. in montibus insularum Flores et Corvo. The *E. grandiflora* having been found on a different island, and some characters of the diagnosis (Flo. Azo. l. c.) being inapplicable to my specimens, it has appeared better at present to retain the ms. name under which my specimens were distributed. I suppose, however, that the species will prove identical, and that the character, in the work quoted, must be modified accordingly.

✓ 152 (—). Bartsia *Trixago*, L. Pico.

153 (—). Scrophularia *aquatica,* L. Flores.

— (271). S. *Scorodonia,* L.

155 (275). Antirrhinum *Orontium,* L. Flores. (In arvis.)
No. 154 nost. spec. est ejusdem varietas subglabra, glaucescens, floribus albidis purpureo-striatis. Hab. in muris rupibusque siccis insulæ Fayal.

156 (272?). Linaria *dealbata,* Link. Fayal.
Folia ovata; inferiora basi utrinque tridentata, superiora sagittata, suprema integerrima. An "*Linaria Sieberi,* Reichb." (Flo. Azo. No. 272)?

156 (274). L. *spuria,* L. Fayal. (Desunt flores.)

— (273). L. *cirrhosa,* Willd.

157 (277). Veronica *officinalis,* L. Fayal; Pico.

158 (279). V. *Dabneyi,* Hochst. Fayal; Corvo.

159 (—). V. *serpyllifolia,* L. Fayal; Flores.

160 (278). V. *Anagallis,* L. Fayal; Flores.

161 (276). V. *arvensis,* L. Fayal; Flores.

162 (—). Acanthus *mollis,* L. Fayal; Flores. (Aliena)?

163 (255). Verbena *officinalis,* L. Fayal; Flores.

164 (283). Lysimachia *Azorica,* Hornem. Fayal; Flores.
Lætevirens. Caules ascendentes. Folia ovata vel elliptica, obtusiuscula; paginæ superioris venæ prominulæ. Calycis laciniæ lanceolatæ. Semina inter angulos plana. In cæteris cum diagnosi *Lysimachiæ nemorum* (DC. Prodr. 8.66) bene convenit. An-ne species propria, in iconibus male depicta, in libris haud melius descripta? *Lysimachia nemorum* vere simillima; tametsi distinguenda caule prostrato radicante sub sole purpurascente, foliis late ovatis acutis, in pagina superiore venis impressis, calycis laciniis subulatis marginibus membranaceis, seminibus inter angulos convexis.

165 (284). Anagallis arvensis, L. Fayal; Flores.

166 (284). A. *cærulea,* All. Fayal.

167 (—). Centunculus *minimus,* L. Flores; Corvo.

✓ 168 (—). Samolus *Valerandi*, L. Flores.

✓ 169 (285). Myrsine *retusa*, Ait. Ins. omnibus.

✓ 170 (218). Cichorium *Intybus*, L. Fayal; Flores.

✓ 171 (—). Lactuca *Scariola*, L. Fayal; Flores.

✓ 172 (—). Sonchus *oleraceous*, L. Fayal.

✓ 173 (230). S. *asper*, Hoffm. Fayal; Pico.

174 (229). Helminthia *echioides*, Gaert. Flores.

✓ 175 (225). Urospermum *picroides*, Desf. Fayal.

✓ 176 (—). Leontodon *Taraxacum*, L. Fayal. (Absunt flores.)

✓ 177 (224). Hypochæris glabra, L. Fayal; Flores.

✓ 178 (223). Thrincia *nudicaulis*, Lowe. Fayal.

Disci achenia muricata, in rostrum læve breviter sed tamen distincte attenuata; radii læviuscula, æqualiter sed tamen obscure attenuata. In cæteris cum *T. hirta*, DC. (agris anglicis) convenit planta a me lecta in Fayal; igiturque forma est intermedia inter *T. hirtam* et speciem in *Flora Azorica*, sub nomine *T. nudicaulis*, Lowei, enumeratam.

✓ 181 (231). "Crepis *polymorpha*, Wallr." Fayal; Flores.

My specimens being young, I trust to the *Flora Azorica* for the name; otherwise they might have been considered *Crepis tectorum*, L.

✓ 179 (221). Tolpis *fruticosa*, Schrank. Fayal; Flores.

In Azoricis, folia sunt lineari-lanceolata, sinuato-dentata, vel breviter et remote dentata, vel subintegra. In hortis anglicis, e seminibus azoricis orta, gerit folia inferiora obovato-oblonga, dentata; superiora lineari-oblonga, integerrima.

✓ 180 (—). T. *umbellata*, Bert. Fayal; Flores.

Disci achenia setis 3-5 aristata. Involucri squamæ exteriores, in anthodiis primariis, interiores superant; in ramis, subæquales sunt; in ramulis, his illæ breviores. *Tolpis quadriaristata*, Herb. Smith. sine auct. *Tolpis crinita*, Lowe, a spec. cl

Lemann comm. An-ne duæ sequentes (219) et (220) species unica cum præsente?

✓— (219). T. *barbata*, Gaert.

✓ — (220). T. *crinita*, Lowe.

✓182 (—). T. *macrorhiza*. DC. Fayal; Flores.

Caulis ascendens, flexuosus, angulatus. Folia inferiora probabiliter (in spec. nost. marcida et deformata) petiolata, suprema acuta. In cæteris cum diagnosi (DC. Prodr. 7. 86) sat bene convenit. Specimen Maderense (a cl. Lemann comm.) differt caule graciliore, recto, et foliis angustioribus, acutis, basi attenuatis.

✓182 (222). T. *nobilis*, Hochst. Flores; Pico.

Cum diagnosi et icone cl. Seuberti, in *Flora Azorica*, optime convenit; nisi quod folia superiora cordata et amplexi caulia sunt, cum dentibus brevioribus et subintegris. "*Crepis dentax*, Sol. ms. in Herb. Banks.—collected in San Miguel, by Masson." Dr. C. Lemann. My very few specimens appear so like connecting links between this species and the *T. macrorhiza* from Madeira, that they raise a doubt whether these two may not be forms of a single species; or, it may be, that a third species should stand between them, represented by the specimens above assigned to *T. macrorhiza*, DC.

✓ 183 (227). Microderis *rigens*, DC. Fayal; Flores.

Scapus plus minusve setoso-hispidus, sæpius aphyllus, raro (ut in icone Seuberti) monophyllus. *M. umbellata*, Hochst. in Flo. Azo. No. 227.

✓183 (228). M. *filii*, Hochst. Fayal.

I have only a single plant of this species, with the dry scape which had remained after the seed had been scattered from it. In this state it was not recognized as a distinct species, until after my return to England.

✓ 184 (214). Centaurea *Melitensis*, L. Fayal.
✓ 185 (215). Galactites *tomentosa*, Mœnch. Fayal; Pico.
✓ 186 (216). Carduus *pycnocephalus*, L. Pico.
✓ 187 (217). C. *lanceolatus*, L. Pico.
✓ 188 (199). Bidens *leucantha*, L. Fayal. (Aliena?)
✓ — (208). Gnaphalium *Pennsylvanicum*, Willd.
✓ 189 (207). G. *luteo-album*, L. Fayal; Flores; Pico.
✓ 190 (209). Filago *Germanica*, L. Fayal.
✓ 191 (210). F. *Gallica*, L. Fayal.
✓ 192 (197). Solidago *Azorica*, Hochst. Ins. omnibus.
S. floribunda, Solander, in Herb. Banks. fide cl. Lemann.
✓ 193 (—). Erigeron *Canadensis*, L. Fayal; Flores; Corvo.
✓ 194 (198). Conyza *ambigua*, DC. Fayal; Flores.
✓ 195 (201). Anthemis *aurea*, DC. Fayal; Flores.
✓ 196 (200). A. *Cotula*, L. Fayal; Flores.
✓ N⁰. 0 (202). Santolina *Chamæcyparissus*, L. (Certe aliena.)
✓ 197 (203). Chrysanthemum *Myconis*, L. Fayal.
✓ 198 (204). C. *segetum*, L. Fayal. (Et quoque No. 199.)
✓ N⁰. 0 (205). C. *coronarium*, L. Fayal. (Certe aliena.)
✓ — (206). C. *pinnatifidum*, L.
✓ 200 (—). Senecio *Maderensis*, DC. Fayal. (Desunt flores.)
✓ — (212). S. *malvæfolius*, DC.
✓ — (211). S. *pseudo-elegans*, Less. (“ Planta capensis”)
✓ 201 (—). S. *vulgaris*, L. Fayal.
✓ 202 (196). Seubertia *Azorica*, H. Wats. ms. Ins. omnibus.

Receptaculum planiusculum. Achenia in verrucas squamæformes insidentia. Involucrum sub fructu reflexum. Perennis. Folia alterna. Pedunculi terminales aut (in plantis junioribus) scapiformes. In cæteris cum charactere generis *Bellis* (DC. Prodr. 5. 304) et diagnosi speciei *B. Azorica* (Flo. Azo. No. 196) omnino convenit. I have ventured to change the generic name of this plant, into one which will commemorate the learned author to whom science is indebted for the first *Flora Azorica ;* and with which the specific name will aptly correspond. It will be for the authorities in Botany to decide whether a new genus shall be founded on small differences (as usually done among the *Compositæ*) or whether the generic character of *Bellis* shall be so far modified as to include the *Seubertia*.

203 (—). Calendula *arvensis,* L. Fayal.

— (213). C. *officinalis,* L. Eadem species ac 203 ?

204 (—). Xanthium *strumarium,* L. Flores.

Varietas, fructu subgloboso, rostris brevioribus.

205 (—). Mirabilis *divaricata,* Lowe. Flores. (Aliena ?)

206 (189). Plantago *major,* L. Fayal ; Flores.

— (190). P. *media,* L.

207 (191). P. *lanceolata,* L. Fayal ; Flores.

Ad hanc quoque adducenda *P. Azorica,* Hochst. (Flo. Azo. No. 192.) In horto nostro culta, e seminibus azoricis, secundo anno, a *P. lanceolato* vix, et ne vix quidem, distinguenda.

— (193). P. *Lagopus,* L.

208 (188). P. *Coronopus,* L. Fayal ; Flores.

209 (—). Littorella *lacustris,* L. Corvo.

210 (—). Amaranthus *Blitum,* L. Flores ; Corvo.

One specimen, from Fayal, may belong to a second species,—perhaps *A. strictus*.

211 (178). Chenopodium *ambrosioides,* L. Fayal ; Flores.

— (179). C. *rubrum,* L.

212 (180). C. *murale,* L. Fayal ; Corvo ; Pico.

213 (181). Salsola *Kali,* L. Fayal.

Anne potius *Salsola Tragus,* L.?

214 (—). Atripex *patula,* L. Flores ; Corvo.

215 (—). Beta *marilima,* L. Fayal.

216 (—). Rumex ——? Caldeira in Fayal.

Seeing this plant with unexpanded flowers in June, I then took only two small lateral branches, under the expectation of returning to the locality at a later season; though in this I was disappointed. It is a very large species, probably exceeding *R. Hydrolapathum*, Huds.

✓ 217 (—). R. *acutus*, Sm. Fayal.
A *Rumice sanguineo*, L. vix distinguenda.

✓ 218 (—). R. *crispus*, L. Corvo.

✓ 219 (—). R. *pulcher*, L. Fayal.

✓ — (185). R. *strictus*, Link. An species unica, 219 (185)?

✓ — (184). R. *bucephalophorus*, L.

220 (—). R. *Acetosella*, L.? Fayal; Flores.
Species incerta. In specim. nostro desunt folia inferiora; superiora lanceolata, ad basin utrinque unidentata, non aliter hastata sunt. Flores in statu alabastri tantum possideo.

221 (—). Polygonum *aviculare*, L. Fayal; Flores; Pico.

✓ 222 (182). P. *maritimum*, L. Fayal.
Raised in my garden, from the seeds brought home, the plants are altogether so intermediate between *P. maritimum* and *P. Raii* (Bab. in Linn. Trans. Vol. 18, p. 458 and Eng. Bot. Supp. 2805) that, if their descent were unknown, it would be highly difficult to refer them to either with certainty. This seems almost to establish the specific identity of *P. maritimum* and *P. Raii*, different as these plants undoubtedly appear in the absence of the intermediate forms.

✓ — (183). P. *Persicaria*, L.

✓ 223 (—). P. ——? Flores; Corvo.
Caulis erectus, lævis. Folia lanceolata, hispida præcipue ad margines. Ochreæ foliorum strigosæ, ciliatæ; florum læves, ciliatæ. Pedunculi læves, terminales vel (raro?) laterales, spicas filiformes subracemosas erectas 2-3 gerentes. Fructus lævis angulis obtusis nitidis. My few specimens,

glued down, will not enable me to make a proper description of this, which I cannot refer satisfactorily to any described species.

224 (177). Phytolacca *decandra*, L. Fayal; Flores.

✓ 225 (—). Persea *Indica*, Spr. Fayal; Flores. (Aliena ?)

✓ 226 (186). P. *Azorica*, Seub. Fayal; Flores; Pico. An species vera? Anne Laurus Barbusana, Lowei?

✓ 227 (187). Daphne *Laureola*, L. Pico. (Ramis divaricatis.)

✓ 228 (—). Corema *alba*, Don. Pico. (In colle juxta litus.)

✓ 229 (—). Buxus *sempervirens*, L. Fayal. (Aliena.)

✓ 230 (172). Euphorbia *Stygiana*, H. Wats. ms. Fayal; Flores

Fruticosa, inermis, subcarnosa, ramis erectis superne foliosis, foliis sessilibus confertis crassis subcoriaceis lineari-oblongis mucronatis sparse-pilosis purpureo-glaucescentibus, pedunculis corymboso-umbellatis (axillaribus solitariis longioribus et terminalibus numerosis umbellatis) subquadriradiatis: radiis furcatis dicephalis, bracteis involucris florum masculorum squamis pedunculisque junioribus villosis, fructu verrucoso. Hab. in fissuris rupium, alt. 1500-2500 ped. angl. supra mare. Ad hanc proxima certe *Euphorbia mellifera*, Ait. (Flo. Azo. No. 172) sed distinguenda (an semper?) foliis lævibus, lanceolatis, tenuiter uncinato-apiculatis, basi fere in petiolum attenuatis, in herbario conspicue venosis; et quoque inflorescentia minus composita atque sublæve, id est, pedunculis corymbi sublævibus tri-quadriradiatis, radiis simplicibus monocephalis, bracteis ciliatis tantum, et involucris extrinsecus lævibus. Having seen very few specimens of *E. mellifera*, I am not prepared to say whether the characters above given will always distinguish that species from *E. stygiana*. Among the many preoccupied names in this genus, all those most applicable to the present species are already applied otherwise. I have therefore taken up the name of the steam vessel (Styx), from which I landed to botanize, and the name is really not ill applied to the dark foliage and sombre appearance of this shrub, with its skeleton-like branches, bare of leaves, except near their summits.

✓ 231 (171). E. *Azorica*, Hochst. Fayal; Flores; Pico.
Species perennis, etiam suffruticosa, ut opinor; sed tamen hoc inquirendum. Proxima *E. Portlandicæ*.

✓ 232 (—). E. *exigua*, L. Fayal.
✓ 233 (—). E. *Peplus*, L. Flores.
✓ 234 (169). E. *Peplis*, L. Fayal.
✓ — (170). E. *Lathyris*, L.
✓ — (173). Ricinus *communis*, L.
✓ 235 (—). Mercurialis *annua*, L. Fayal.
✓ 236 (—). Parietaria *Lusitanica*, L. Pico.
✓ 237 (176). P. *officinalis*, L. Fayal; Flores.
✓ 238 (174). Urtica *Azorica*, Hochst. Fayal.
Probabliter varietas *U. membranaceæ*, Poir. Spicæ fœmineæ subglobosæ vel cylindricæ, vel etiam filiformes.

✓ — (175). U. *Lowei*, Seub.
✓ 239 (—). Populus *nigra*, L? Fayal; Flores. (Aliena?)
✓ 240 (—). Salix *fragilis*, L. Fayal. (Aliena?)
✓ 241 (167). Myrica *Faya*, Ait. Fayal; Flores; Pico.
✓ 242 (163). Juniperus *Oxycedrus*, L.? Fayal; Flores; Pico.
Seubert places this as a variety (*brevifolia*, Hochst.) of the species to which it is here doubtfully assigned. I have not seen ripe fruit, but the young fruit, equally as the leaves, differ considerably from those of all the examples of *J. Oxycedrus* which have come under my observation, excepting one from Madeira.

✓ — (164). Pinus *Pinea*, L.
✓ — (165). Taxus *baccata*, L.

Like the orange and lemon, in the Western Azores, these two trees grow where they are planted; and that is all their claim to nativity.

√243 (157). Serapias *cordigera*, L. Fayal.

I saw it so low as 300 feet in Fayal, no where above 2000. For this, as well as other species, the range of altitude stated in the Flora Azorica must not be very implicitly relied upon.

244 (155). Habenaria *micrantha*, Hochst. Fayal; Flores.

Calcar fusiforme, sepalis labelloque lineari integro paulo longius, ovario bracteis breviori bis terve brevius. Flores numerosi (50) dense spicati, aut, in specimine parvo, pauci (12) laxe spicati.

√ 244 (156). H. *longebracteata*, Hochst. Flores.

Calcar filiforme incurvum, sepalis labelloque lineari integro duplo longius, ovario bracteas subæquante triente brevius, Flores numerosi (30). These two species of *Habenaria* (or *Platanthera*) are probably variable. I found few plants, and have reserved only three of them for my herbarium. They are here partly described, because not quite corresponding with the diagnoses and figures in the *Flora Azorica*. Shortly before leaving the islands, it was my misfortune to lose a book in which I had sketched the flowers of these and other novelties from the living plants. Now, I have only the specimens in my herbarium to look to; the duplicates having been distributed.

√ 245 (—). Iris —— ? Prope Largens, in Flores. (Indigena ?)

√ 246 (—). Gladiolus —— ? Prope Flamingos, in Fayal. (Aliena ?)

√ 247 (0). Amaryllis *Belladonna*, L. Fayal. (Aliena.)

√ — (152*). Scilla *maritima*, L.

248 (—). Narcissus ——? In monte Carneiro, in Fayal. (Aliena?)

NB.—The bulbs and withered leaves of the *Amaryllis* were abundant about Horta, in the month of June, and some flowers appeared early in September. The *Iris, Gladiolus* and *Narcissus* were seen only in single localities; the flowers gone, and leaves withered.

249 (153). Smilax *divaricata,* Sol. ms. in Herb. Banks. Pico.

This plant corresponds very ill with specimens of *S. mauritanica* in the herbarium of Sir W. J. Hooker, which is considered synonymous with *S. tetragona,* the name under which Seubert places the plant from Pico. In my specimens, the stem is terete and striated, though somewhat angular where the flowers grow.

— (154). Ruscus *androgynus,* L.

250 (161). Arum *Italicum,* Mill. Fayal.

N°.0 (162). Colocasia *antiquorum,* Schott. (Culta.)

Of these two plants I saw the leaves only: those of the *Arum* almost withered away. I must therefore trust to the *Flora Azorica* for their names. I had supposed the *Arum* to be our *maculatum,* and alluded to the *Colocasia* under name of *Caladium,* called by the natives "*Coco*" —typographically improved into "*Cocoa,*" which is *a* difference indeed.

— (160). Lemna *minor,* L.

251 (158). Potamogeton *natans,* L. Fayal; Flores; Pico.

252 (—). P. *heterophyllus,* L.? Flores; Corvo.

253 (—). P. *pusillus,* L. Flores.

— (159). P. *pectinatus,* L.

254 (147). Luzula *purpurea,* H. Wats. ms. Ins. omnibus.

I adopt the original specific name for this species. Dr. C. Lemann informs me that a specimen is in the Banksian herbarium, collected in San Miguel, by Masson; though it is misnamed *campestris.* It now appears, by a reference in the Flora Azorica, that Masson's plant had been published, though not described, under the name of "*Juncus purpureus,* Masson" (Buch in Abhandl. der Berlin Akad. 1816—17. p. 362.) Guthnick (1839 ?) circulated his specimens labelled *Luzula elegans,* Lowe; and I presume that the species was published under the same name in Hochstetter's list (Wiegemann's Archiv. 1843) which I have not been able to obtain. In the London Journal of Botany (1843) I stated that *L. elegans,* of Lowe, was quite a different species; and then (unaware of the earlier name *purpureus*) suggested that of *azorica.* Lastly (1844) Mr. Seubert, in the full knowledge of these earlier names, describes the plant under the inconveniently long name of *purpureo-splendens.* Now, as only one species had been brought from the Azores, and I expressly referred to the specimen of Guthnick, the travelling companion of Hochstetter, whose misapplication of Lowe's name I sought to correct, Seubert knew perfectly well that my name *azorica* was applied to the same species which he has chosen to re-name. Under these circumstances, the original specific name of Masson or Buck is resumed, with the necessary change from *Juncus* to *Luzula.*

✓ 255 (150). Juncus *acutus,* L. Fayal; Flores.
✓ — (149). J. *maritimus,* L.
✓ 256 (—). J. *effusus,* L. Fayal; Flores.
✓ 257 (151). J. *capitatus,* Wiegelt. Fayal; Flores; Corvo.
✓ 258 (152). J. *uiginosus,* Roth. Flores.
✓ 259 (148). J. *bufonius,* L. Fayal; Flores.
✓ 260 (147*). J. *tenuis,* Willd. Fayal.

Sub nomine *J. lucidus,* Hochst. in Flora Azorica;

sed species Azorica omnino convenit cum speciminibus Americanis a cel. Hooker comm. sub nomine *J. tenuis*.

✓ 261 (—). Cladium *Mariscus*, Br. Flores.

✓ 262 (146). Cyperus *longus*, L. Fayal; Flores.

✓ 263 (145). C. *esculentus*, L. Ins. omnibus. (Aliena?)

✓ 264 (—). C. *vegetus*, Willd. Flores.

Only two tufts of this were found, on the sea cliffs by Santa Cruz. It appears identical with plants in Kew Gardens and in the herbarium of Sir W. J. Hooker, which bear this name. Two or three minor points in Kunth's character and description are inapplicable, namely, the long leaves, shining seeds, and ferruginous dots on the glumes or scales.

✓ — (142). Scirpus *maritimus*, L.

✓ 265 (—). S. *setaceus*, L. Fayal.

✓ 266 (140). S. *Savii*, Sebast. et Maur. Fayal; Flores; Pico.

✓ 267 (141). S. *fluitans*, L. Pico.

✓ 268 (143). S. *palustris*, L. Flores.

✓ 269 (144). S. *multicaulis*, Sm. Fayal; Pico.

✓ 270 (129). Carex *sagittifera*, Lowe. Fayal; Flores; Pico.

Cæspitosa. Utriculi maturi reflexi. Achenium oblongum. *C. Guthnickiana*, Gay. (Flo. Azo. No. 129.)

✓ 271 (—). C. *vulpina*, L. Flores.

✓ 272 (131). C. *stellulata*, L. Flores; Pico.

✓ 273 (130) C. *divulsa*, Good. Fayal.

✓ 274 (133). C. *Azorica*, Gay. Pico.

✓ 275 (132). C. *flava*, L. Fayal; Flores; Pico.

✓ 276 (134). C. *lævicaulis*, Kunze. Flores.

✓ 277 (137). C. *Floresiana*, Hochst. Flores.

✓ 277 (138). C. *Vulcani*. Hochst. Fayal; Flores?

It is probable that *Carex Watsóni*, Boott ms. (alluded to in *Flora Azorica*) includes both these species of Hochstetter. I had only some six or eight specimens altogether, and Dr. Boott saw but half of them. Of the two reserved for my herbarium, one, in a young state, from Fayal, seems clearly *C. Vulcani*. The other is from Flores, and more advanced; and it corresponds better with the description and figure of *C. floresiana*, though different in some particulars. It is two feet high; with two barren, and only two fertile spikes; the uppermost barren spike rather exceeding the bracts; the scales or glumes of the female spikes taper more gradually to their apex; the utriculi also taper more both at base and apex, and are speckled with dark brown dots. My two specimens appear really distinct species; but since priority in publication will keep up the names of Hochstetter, the only question of moment, is, whether my Flores specimen, above mentioned, is the *C. floresiana* or a third species. If the former, the description in *Flora Azorica* must be modified where at variance with the characters above-mentioned.

✓ — (135). C. *rigidifolia*, Hochst.
✓ 278 (136). C. *Hochstetteriana*, Gay. Fayal.
✓ 279 (139). C. *pendula*, Huds. Fayal; Flores.

Species unica sub nominibus *C. pendula*, Huds. *C. maxima*, Scop. *C. myosuroides*, Lowe.

✓ 280 (109). Eleusine *Indica*, L. Fayal.
✓ 281 (108). Cynodon *Dactylon*, Pers. Fayal.
✓ 282 (99). Digitaria *sanguinalis*, Scop. Fayal; Flores; Pico.
✓ 283 (100). Setaria *glauca*, Beauv. Fayal; Flores.
✓ 284 ? (—). S. *verticillata*, Beauv. Fayal?

A single example of this was found among the specimens collected in Fayal. I have no recollection of seeing it in the islands, and suppose that the one specimen may have been previously in the drying paper taken out from England: if not, the species was overlooked among the *S. glauca*.

✓ 285 (—). Panicum *Crus-galli*, L. Fayal; Flores.
✓ 286 (98). Anthoxanthum *odoratum*, L. Fayal; Flores.
✓ 287 (111). Lagurus *ovatus*, L. Fayal.
✓ 288 (103). Polypogon *maritimus*, Willd.
✓ 288 (104). P. *Monspeliensis*, Desf. Fayal; Flores; Pico.

My specimens were mingled and distributed indiscriminately under the name of *P. monspeliensis*. As the arista of the palea was long, short, or absent on different specimens, some of them should probably have been labelled *P. maritimus*.

✓ 289 (102). Gastridium *australe*, Beauv. Fayal; Flores; Pico.
✓ 290 (114). Gaudinia *geminiflora*, Gay. Fayal.

A *G. fragili*, nisi spiculis hirtis, vix differt.

✓ 291 (119*). Cynosurus *echinatus*, L. Fayal; Pico.
✓ 292 (119). Kœleria *Phleoides*, Pers. Fayal.
✓ 293 (106). Deyeuxia *Azorica*, Hochst. Corvo.
✓ — (105). D. *cæspitosa*, Hochst.
✓ 294 (—). Agrostis *alba*, L. Fayal; Flores; Corvo.
✓ 295 (101). "A. *verticillata*, Vill." Fayal; Flores.
296 (—). Agrostis? Summit of Pico.
✓ 298 (—). A. *pallida*, DC.? Fayal; Flores.

My weak eyes forbid any sufficient examination of the grasses. Possibly No. 296 or No. 298 may be the *Deyeuxia cæspitosa*, Hochst.

✓ 297 (110). Aira *caryophyllea*, L. Fayal; Flores; Pico.
✓ 299 (—). Deschampsia *argentea*, Lowe. Flores.
✓ 300 (—). Holcus *lanatus*, L. Fayal; Flores.
✓ 301 (96). H. *rigidus*, Hochst. Fayal; Flores.

Though my specimens are two feet high, I presume them to be the same species as the small plant figured in the *Flora Azorica*. Clearly distinct from *H. mollis*, to which I had first improperly referred them.

✓ 302 (—). Avena *elatior*, L. Fayal; Flores.
✓ 303 (112). A. *hirsuta*, Roth. Fayal.

✓ — (113). A. *brevis*, Roth.

✓ 304 (107). Arundo *Donax*, L. Ins. omnibus. (Aliena ?)

✓ 305 (117). Briza *maxima*, L. Fayal; Flores; Pico.

✓ 306 (118). B. *minor*, L. Fayal.

✓ 307 (124). Bromus *Madritensis*, L. Fayal.

✓ — (123). B. *rubens*, L.

✓ 308 (—). B. *mollis*, L. Fayal; Pico.
Varietas, panicula conferta, spiculis hirsutioribus; quæ ad *B. confertum*, Bieb. proxime accedit, sed tamen distinguenda aristis rectis et glumis minus nervosis.

✓ 309 (127). Brachypodium *distachyum*, Beauv. Pico.

✓ 310 (—). B. *sylvaticum*, Beauv. Fayal.
Varietas, foliis vaginisque subglabris.

✓ — (126). Triticum *repens*, L.

✓ 311 (122). Festuca *bromoides*, L. Fayal.

✓ 312 (121). F. *petræa*, Guth. Fayal.

✓ 313 (120). F. *jubata*, Lowe. Fayal; Corvo?
Specimina nostra immatura sunt; sed autem ad hanc speciem pertinere videntur: et quoque *F. glauca*, var. *longebracteata*, Hochst. in Flora Azorica, No. 120.

✓ 314 (—). Poa *trivialis*, L. Fayal; Pico.

✓ 315 (—). P. *annua*, L. Fayal.

✓ 316 (—). P. *Eragrostis*, L. Pico.

✓ 317 (116). P. *rigida*, L. Fayal.

✓ — (115). P. *loliacea*, Huds.

✓ 318 (125). Lolium *multiflorum*, Lam. Fayal; Flores.
Varietas aristata *Lolii perennis*, L.

✓ 319 (128). Hordeum *murinum*, L. Fayal.

✓ 320 (71). Polypodium *vulgare*, L. Fayal; Flores.
Varietas, fronde ampliori, subtriangulari, serrata.

✓ 321 (87). Cystopteris *fragilis*, Bernh. Fayal; Flores; Pico.

✓ 322 (70). Grammitis *leptophylla*, Sw. Fayal.

✓ 323 (84). Scolopendrium *vulgare*, Sm. Fayal; Flores.

✓ 324 (76). Asplenium *palmatum*, Sw. Fayal; Flores; Pico.

✓ 325 (80). A. *monanthemum*, Sm. Fayal; Flores

✓ 326 (78). A. *anceps*, Sol. Fayal; Flores.
Ad hoc proxime accedit *A. Trichomanes*, L. in nonnullis exemplis.

✓ 327 (79). A. *marinum*, L. Fayal; Flores.

✓ 328 (77). A. *Adiantum-nigrum*, L. Fayal; Flores.

✓ 329 (—). A. *lanceolatum*, Huds. Fayal; Flores.

✓ 330 (—). Athyrium *Filix-fœmina*, Sw. Fayal; Flores.

✓ 332 (81). Allantodea *umbrosa*, Br. Flores; Pico.

✓ — (82). A. *axillaris*, Kaulf.

✓ 331 (85). Nephrodium *fœnesecii*, Lowe. Fayal; Flores; Pico.

✓ 333 (—). N. *molle*, Sw. Fayal; Flores.

✓ 334 (86). Aspidium *angulare*, Sm. Fayal; Flores.

✓ 335 (69). Acrostichum *squamosum*, Sw. Fayal; Flores; Pico.

✓ 336 (75). Blechnum *boreale*, Sw. Fayal; Flores; Pico.

✓ 337 (74). Pteris *arguta*, Vahl. Fayal; Flores; Pico.

✓ 338 (73). P. *aquilina*, L. Fayal; Flores; Pico.

✓ 339 (83). Woodwardia *radicans*, Sw. Fayal; Flores; Pico.

✓ 340 (88). Dicksonia *Culcita*, Herit. Fayal; Pico.

✓ — (72). Adiantum *Capillus-Veneris*, L.

✓ 341 (90). Trichomanes *speciosum*, Willd. Fayal; Flores.

✓ 342 (89). Hymenophyllum *tunbrigense*, Sm. Fayal; Flores; Pico.

✓ 343 (—). H. *Wilsoni*, Hook. Flores; Corvo.

✓ 344 (91). Osmunda *regalis*, L. Fayal; Flores.

✓ 345 (92). Ophioglossum *vulgatum*, L. Flores.
Exempla Floresiana cum Britannicis sat bene conveniunt, atque ad speciem alteram caute referenda. In paucis exemplis rhizoma frondes duas eodem tempore gerit; sed tamen frequentius fronde unica, statura, et spicæ pedunculi longitudine planta Azorica cum *O. vulgato* convenit.

✓ 346 (—). Lycopodium *Selago*, L. Pico; Fayal?

✓ 347 (93). L. *suberectum*, Lowe. Fayal; Flores; Pico.

✓ 348 (95). L. *denticulatum*, Willd. Fayal; Flores; Pico.

✓ — (94). L. *cernuum*, L. (San Miguel. J. C. Hunt, Esq. sp.)

✓ 349 (—). Isoetes *lacustris*, L. Corvo.

✓ 350 (—). Equisetum *fluviatile*, Sm.—nec Linn. Fayal; Flores.

NB.—There are two other phænogamic plants, of which I possess leaves only, and cannot certainly indicate even their orders. One is probably an *Umbelliferous* plant, from the neighbourhood of Horta, in Fayal: the other may be a large-leaved *Composita*, from the Caldeira of Fayal. The total number of species, in both collections together, amounts to four hundred Flowering plants and thirty-four Ferns, etc. But among the Flowering plants enumerated, there are at least twenty introduced species, and many others which probably are in the same condition. Some small further abatement may be made, for species counted twice over, under different names (see *Tolpis umbellata*, *Hypericum decipiens*, etc.), although I have endeavoured to reduce the number of these as far as possible. And when we observe how many in the list are the common weeds of South Europe, which emigrate with agriculture, it may well be doubted whether the true Azoric Flora, as far as yet ascertained, reaches to three hundred species of Flowering plants. There is a strong presumption that several additional species would yet be discovered by botanists who extended their researches over other parts of the islands and saw them at a different season. About seventy of the species collected by Messrs. Hochstetter and Guthnick are wanting in my own collection; and this latter, in turn, has about one hundred and ten species which apparently were not found by those two travellers.

Of the *Cellulares*, I must confess myself sadly negligent. Only on two or three occasions, while waiting on the same spot for other parties, did I attempt to collect any. For the following list of some few *Mosses*, etc., which were thus collected, I am indebted to Dr. Taylor. Cellular plants abound in the Island of Flores, whence most of these, I think, came.

351 Polytrichum *formosum*, Hedw.
352 Polytrichum *elatum*, Schwaeg.
353 Fontinalis *antipyretica*, L.
354 Hypnum *alopecurum*, L.
355 Trichostomum *rigidifolium*, Tayl. ms.
356 Bartramia *fontana*, Swartz.
357 Trichostomum *fasciculare*, Hedw.
358 Trichostomum *canescens*, Hedw.
359 Archidium *phascoides*, Bridel.
360 Diphyscium *foliosum*, Mohr.
361 Trichostomum *polyphyllum*, Schwaeg.
362 Polytrichum *aloides*, Hedw.
363 Bartramia *fontana*, Swartz.
364 Jungermannia *juniperina*, Swartz.
— J. *punctata*, Tayl. ms.
— J. *complanata*, L.
365 J. *platyphylla*, L.
366 J. *Tamarisci*, Hook.
367 Fegatella *conica*, Tayl. (Fl. Hib.)
368 Fegatella *hemisphærica*, Tayl.
369 Lunularia *vulgaris*, Michel.
370 Jungermannia *pusilla*, L.
371 Parmelia *reticulata*, Tayl.
372 Peltidea *horizontalis*, Ach.
373 Parmelia *herbacea*, Ach.
374 Parmelia *lævigata*, Sm.
375 Parmelia *caperata*, Ach.
376 Sticta *pulmoncea*, Ach.
377 Sticta *damæcornis*, Ach.

✓✓ 378 Stereocaulon *paschale*, Ach.
✓✓ 379 Parmelia *leucomelas*, Tayl.
✓✓ 380 Cenomyce *gracilis*, Ach.
✓✓ 381 Usnea *plicata*, Ach.
✓✓ 382 Cenomyce *rangiferina*, Ach.
✓✓ 383 Ramalina *fraxinea*, Ach.
✓✓ 384 Roccella *tinctoria*, DC.

Description of a new British Species of HELIANTHEMUM; *by* J. E. PLANCHON, *Docteur en Sciences de Montpellier.*

(TAB. XXI.)

THE few annual species of *Helianthemum* which rank with *H. guttatum* in the section "*Tuberaria*," are remarkable for the deficiency of stipules to their lower leaves only, and for the absence of bracteas at the base of their pedicels. *H. guttatum*, especially, though a variable plant as regards size and pubescence, preserves in all stages its pedicels destitute of bracteas and diverging at right angles, even when the fruit is mature. The growing plant, with which I have been long familiar in the South of France, is thus characterized, and the same peculiarities exist in all the specimens I have examined from Spain, Italy and Central France. Being perfectly acquainted with the aspect of this pretty species, I could not recognize it in specimens, bearing the name of *Helianthemum guttatum*, which are preserved in the rich herbarium of Sir W. Hooker, to whom they were given by Mr. Wilson of Warrington, who had gathered them himself on the mountain of Holyhead, in the Isle of Anglesey. The straggling mode of growth, with short, numerous and dichotomous bunches of flowers, the existence of bracteas even to the upper flowers, and of pedicels, which at first slightly bend down, but rise up when the fruit is ripe and stand at an angle of forty-five degrees to the axis of the cluster, such were the characters, which at a first glance, suggested the idea that the plant was specifically distinct from *H. gut-*

tatum. In confirmation of this idea, I shall add two particulars, which seem to possess some claim to notice. In the first place, culture makes no difference in that main point, the presence of bracteas, which is proved by a sketch of the cultivated specimen, kindly sent by Mr. Wilson. And, secondly, the above cited habitat is the only place where it grows in England proper; while the *Helianthemum guttatum*, such as it is seen in France and the more southern parts of Europe, is not found in this country, and the plant so called in the English Floras (especially in Smith's *Flora Britannica*) consists, in my opinion, of two species; one being a native of Jersey, (an island rather allied by geographical position to the French Flora than the British,) this is, judging by an imperfect specimen, merely a hispid variety of *H. guttatum;* while the other is the Anglesey plant, now under consideration, which seems confined to a much more northern and very limited habitat, growing only on one spot in that island. The general diffusion of *Helianthemum guttatum*, in its native countries, renders it improbable that a single place in that islet should be the type of its growth in Great Britain. Under the conviction therefore of the species being distinct, I confer on it the name of the late Mr. Brewer, who, in Hudson's *Flora Anglica*, is stated to have been its original discoverer.

HELIANTHEMUM BREWERI, *Planchon.*

Helianthemum (*e sectione* Tuberaria); annuum a basi ramosum subdiffusum viscidulo-hispidum, pedicellis bracteatis, defloratis subdeflexis, fructiferis erecto-patentibus, petalis angustis immaculatis, staminibus 8-12, seminibus quam in H. guttato majoribus. (Tab. XXI.)

Cistus guttatus, *Huds. Fl. Angl., p.* 232, *ex local. citat.*

Cistus guttatus, *Smith Fl. Brit. t.* 2, *p.* 573, *(pro parte et quoad plant. Brewerian, non Engl. Bot.)*

HAB. Anglesey, *Mr. Brewer*, (*Hudson*). Holyhead Mountain, *Rev. Mr. Williams*, and also near Amlwch, *Rev. H. Davies, W. Wilson, Esq.*

Herba a basi ramosa, vel, axi abbreviato pluricaulis, viscidulo-hispida. Caules 4-6, subdiffusi, semel bis-trichotomi, in racemos laxos, bracteatos desinentes. Folia pauca, opposita, sessilia, inferiora 4-6, rosulata, late obovata, semipollicaria, obtusissima; caulina stipulata, lineari-oblonga, obtusiuscula, omnia pilis stellatis simplicibus intermixtis, utrinque hispidula. Bracteæ conspicuæ, lineares, non raro falcatæ, inferiores 3-4 lin. longæ, hinc ad summos flores gradatim minores, numquam deficientes. Pedicelli graciles, 6-8 lin. longi, floriferi subdeflexi, deflorati diu sic persistentes, tandem, maturo semine, erecto-patentes. Calyx ut in *H. guttato.* Sepala conspicue nigro-punctata; trium majorum alterum latus in præfloratione tectum, petaloideo-membranaceum. Petala in flore unico observata, angusta, lutea, immaculata. Stamina definita (8-12) pistillo vix longiora. Ovarium et fructus vix *H. guttati*, sed semina pauciora et evidenter majora.

Tab. XXI. Plant of *Helianthemum Breweri;* nat. size, *f.* 1. Calyx with fruit, *f.* 2. Capsule, magnified.

Description of a new species of the genus EUDEMA; *by* J. E. PLANCHON, *Docteur en Sciences de Montpellier.*

(TAB. XXII.)

In referring to the genus *Eudema* the little cruciferous plant from the Andes which I am about to describe, I shall avail myself of the perfectly fructified state of my specimens to make some slight modifications in the generic character. The noble work where it was first described, (*Humboldt et Bonpland Plantes Equinoctiales*) exhibits the complete analysis of the only two species then known; but the author of the definition himself adds that little confidence can be placed on these analyses, which were made from imperfect fruit, and he recommends all those Botanists who may possess better specimens, to revise and correct his characters. Of these two species, one *Eudema nubigena*, possesses spathulate, thick leaves which are hairy at the margins, and very small flowers, with *petals shorter than the calyx.* The fruit, like that of the other species, *E. rupestris,* is supposed to have a dissepiment, so deeply notched towards the summit, that only a slight plate remains at the bottom of the cell. The new species which I have observed is somewhat differently organised, in that the dissepiment is widely fenestrated towards the lower part, and the thin plate which remains is situated at the summit of the cell. An exactly similar structure prevails in the ovoid fructification of another plant of this same genus, which exactly resembles *Eudema nubigena* in its aspect, and the form and ciliation of the foliage, the shape of the fruit and number of its seeds; but this same plant, which I have seen in Sir W. Hooker's herbarium, differs again from Humboldt's species, because its petals are decidedly longer than the calyx. May it not be supposed that the flowers of *Eudema nubigena,* described by the above named author, were not fully expanded? I incline to think so and to consider Sir W. Hooker's plant as the *Eudema nubigena.* However, this may be, whether distinct or not, the dubious plant in question serves to confirm the structure of fructification in my *Eudema grandiflora,* and to render still more desirable a new examination of *E. rupestris* and *nubigena.*

EUDEMA, *Humb. et Bonpl. Pl. Equin. t. 2, p.* 133.

Char. Gen.—*Calyx* tetraphyllus, foliolis basi subæqualibus laxis. *Petala* 4, æqualia, calycem superantia! vel eodem breviora? *Stamina* 6, tetradynama edentula. *Silicula* bivalvis, stylo persistente superata, ovata vel oblonga, valvis carinato-concavis, septi latissime fenestrati rudimento loculi apicem! vel ejusdem basim(?) occupante. *Semina* 6-20, subovoidea. *Integumentum* simplex, tenue. *Albumen* nullum, nisi lamina gelatinosa tenuissima versus umbilicum crassior. *Embryonis* curvati *cotyledones* plano-convexæ, *radicula* adscendenti æquilong, æincumbentes.

Eudema *grandiflora*, Planch.; rhizomate simplici brevi, foliis linearibus glaberrimis confertis basi dilatatis, pedicellis solitariis brevibus occultis, petalis semipollicaribus, siliculis oblongis 15-20 spermis. (Tab. XXI.)

HAB. In Andium Peruvianorum monte Asuay, 15,000 ped. alt. *Jameson.*

Planta humilis, perennans, glaberrima. Rhizoma simplex, verticale, 1-2 pollicare, apice incrassato, fasciculum foliorum edens, inferne attenuatum, sublignosum, albidum, squamis brevibus scariosis, foliorum vetustorum vestigiis arcte vestitum. Folia primo aspectu monocotyledoneam referentia, basibus dilatatis, scarioso-membranaceis, imbricatim adpressis, vix pseudo-bulbum efficentia, hinc erecto-patentia, oblongo-linearia, 1½ poll. longa, 2-3 lin. lata, integerrima, obtusa, crassiuscula, obsolete trinervia. Flores, pro planta magni, albi, e fasciculo foliorum emergentes; pedicelli solitarii, uniflores, axillares, folio multo breviores et ideo florentes occulti.

Tab. XXII. Plant of *Eudema grandiflora,* Planch.; *nat. size, f.* 1. Flower; *f.* 2. Stamens; and pistil *f.* 3. Silicula; *f.* 4. One valve of the silicula showing the incomplete septum above, and the seeds; *f.* 5. Seed; *f.* 7. the same laid open, showing the embryo:—*magnified.*

Description of a new Species of CALYCOPHYLLUM *from British Guiana; by the* CHEVALIER ROBT. H. SCHOMBURGK, Ph. D.

(TABS. XXIII. XXIV.)

What a splendid aspect our Rose bushes afford under the temperate zone! That favourite plant, alike cultivated by the poor and the rich, how they ornament the garden, and adorn the hedges surrounding our fields, when in full blossom. Let then imagination convey you to the great garden of nature in Guiana, clothed in tropical exuberance; and among those productions of a congenial sun and fertile soil, figure to yourself trees from 40 to 50 feet high, presenting a mass of leaves of the colour of our favourite flower, from a deep pink to the lightest rose, and perhaps your fancy will assist you to form some idea of the picture I beheld at one of the valleys of the river Rupununi, where a high mountain on the river's left bank turns its bed boldly to the east. The banks of the stream, and the steep side of the hill were alike covered with trees, clothed with rose-coloured leaves, and only on a near approach, the shining green leaves, and the spikes of flowers of a velvety blue, were discovered.

There are several genera of the natural family of *Rubiaceæ*, as *Calycophyllum*, *Mussænda*, *Pinkneya*, &c., where one of the teeth of the calyx expands into a petioled and coloured leaf of a membranaceous texture.

In the tree under description this is the case in such a remarkable way, that these bract-like organs of different shades of rose-colour are so numerous as to give the whole landscape a peculiar character which appears *couleur de rose*.

It proved a new species of *Calycophyllum* and as I am prevented, by the existence of a genus *Stanleya*, from naming one of the new genera discovered during the expeditions in the interior of Guiana, under authority of Her Majesty's Colonial Office and during the execution of which the Right Honourable Lord Stanley presided as Secretary, after his Lordship, I have received his permission to make this splendid tree known to Botanists under the name of *Calycophyllum Stanleyanum*.

CALYCOPHYLLUM, *De Candolle*, Familia RUBIACEÆ, *Prodromus*, *v*. 4, *p*. 367.

C. *Stanleyanum* (Schomb.); foliis ovalibus vix acuminatis basi cuneatis utrinque glabriusculis, racemis strictis vix ramosis, floribus sessilibus, calycis limbi dentibus acutis uno in floribus paucis bracteisque 1-2 inferioribus in laminam maximam petaloideam orbiculatam petiolatam expansis. (Tabs. XXIII. XXIV.)

Arbor 40-50 pedalis, ramis glabris teretibus, cortice cinereo. Folia opposita, 3-4 poll. longa, 1½-2 poll. lata, v. ramealia minora, membranacea, penninervia et reticulatim

venosa, venulis ultimis translucidis. Petioli 2-4 lin. longi; stipulæ utrinque solitariæ, integræ, subconnatæ, ovato-lanceolatæ, acutissimæ, fuscescentes, circa 2 lin. longæ, deciduæ. Racemi terminales v. in axillis supremis axillares, 3-6 poll. longi, stricte erecti, simplices, v. utrinque ramo aucti, a medio ad apicem floriferi, tenuissime tomentosi, puberuli, pedunculo ancipiti, rachi angulata. Flores sessiles, sparsi, solitarii, v. per 2-3 congesti, singuli bractea parva squamæformi subtensi. Bracteæ 1-2, inferiores cujusve racemi et lobus alter calycum 1-2 inferiorum sæpius expansæ in laminam roseam 1-1½ pollicarem, obovato-orbiculatam, obtusam, basi rotundato-cuneatam, petiolatam, ad venas puberulam. Calyces 2 lin. longi, tomentosi. Corolla extus pubescens, tubo 3 lin. longo, limbo expanso, laciniis latis obtusis. Stylus vix apice brevissime emarginato-bifidus. Stamina et ovarium omnino *Calycophylli*.

The wood of the tree is very hard and of a yellowish-brown colour, and like others of the tribe *Cinchoneæ*, is of a strong bitter, so that I have little doubt it possesses febrifugal properties. The Macusi Indians call the tree Dehpó; I have only found it near the Rivers Rupununi and Takutu in the 3rd parallel of north latitude.

It is worthy of remark that the bract-like leaf of the calyx only forms itself after the flower has dropped off. This is the reason why only the lower parts of the racemes are adorned with them. The growth of the calycal leaf is very rapid, expanding to its natural size in the course of a couple of days.

References to the Plate, TABS. XXIII. XXIV.

Fig. 1. Calyx with one of the lobes expanded into the large coloured petal-like appendage. *f.* 2. Flower. *f.* 3. Calyx (of the ordinary character) and pistil. *f.* 4. Corolla laid open, showing the stamens :—more or less *magnified*.

O Two New Species of the Family LAURINEÆ from the Forests of Guiana; by the CHEVALIER ROBERT H. SCHOMBURGK, Ph. D.

Grandeur in the development of its forms is the chief feature of tropical vegetation. The grass assumes an arborescent aspect, the Fern vies in appearance with the stately Palm. Gigantic trees raise their lofty crowns to a height unknown in the European forest and display the greatest contrast in the structure and appearance of their foliage, offering inexhaustible treasures, not only for architecture, but likewise for the manufacture of furniture and for other domestic uses.

The primitive forests of Guiana eminently afford an instance of the fecundity with which nature has spread her gifts to render their aspect more imposing and majestic.

I have somewhere else described the *Mora,** which most appropriately has been called the King of the Forest, as it towers above every other tree and reaches frequently a height of 90 to 100 feet before it diverges into branches. Among those vegetable productions, which in height and circumference vie with the *Mora,* are trees of the *Mimosa,* the *Laurel,* the *Cæsalpinia,* the *Sapota,* the *Bombax* and various other tribes, of which Botanists and travellers, in consequence of their gigantic size and the uncertainty when they are in flower, have not been able to procure the necessary data to assign them a station in their system.

The tree which forms the first object of my description has been known since the last century. Bancroft, in his Natural History of Guiana published in 1769, describes the *Greenheart* tree or *Sipeira,* and draws attention to its usefulness, in consequence of the weight, solidity and permanence of its wood. In later years, several cargoes of its wood were sent to the Clyde and to Liverpool, where it commanded a higher price than any other wood in the market; but the botanical character of the tree, which furnished such useful timber, remained unknown.

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* *Mora excelsa,* Bentham in Linnæan Transact. vol. XVIII. p. 207.

A new interest was attached to this tree when in 1834 Mr. Rodie, late a Surgeon in the Royal Navy, discovered that the fruit and bark of the Greenheart contained a vegetable alkali which he used with the greatest success in the intermittent fevers of that colony. His attempts at that time to draw the attention of the medical profession to this discovery, failed. I observe, however, that on the 17th of April, 1843, a paper "on the *Bebeeru* tree of British Guiana, by Douglas Maclagan, M.D., F.R.S.E.," was read at the Royal Society of Edinburgh,* which gives the results of Dr. Maclagan's experiments, while at the same time he regrets being unacquainted with its botanical character.

It was natural that at my first arrival in Guiana my curiosity was attracted to this remarkable tree; but all attempts to procure specimens of its flowers proved in vain, with the exception of a poor specimen which Mr. Patterson, an extensive woodcutter, presented to me. The flowers were decayed, and though I thought I could not be mistaken in pronouncing it a Laurinaceous plant, it proved impossible to assign the section of this extensive family to which it belonged.

It appears other Botanists have been equally unsuccessful, and I presume it must be ascribed to the anxious wish to have the uncertainty cleared up, that Dr. Graham contented himself with imperfect flowers of this tree, to establish a new genus. They were all abnormal, the parts of the flower being irregularly increased in number, a circumstance observed in several species of *Laurineæ*.

Shortly before I left Guiana I was able to procure some more perfect inflorescence, which I sent to Mr. Bentham, and with his assistance, I can now give the following description, which will prove it to be a somewhat anomalous species of *Nectandra*.

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* Since printed in the Transactions of that Society, Vol. XV. part III.

I have dedicated this species to Dr. Rodie, the first European discoverer of its antifebrile virtues.

NECTANDRA, *Rottb.*—Familia LAURINEÆ.—Tribus, Nectandreæ, *Nees Laurin.* p. 276.

N. Rodiœi (Schomb.); foliis suboppositis oblongo-ellipticis breviter acuminatis coriaceis glabris supra nitidis obscure reticulatis, paniculis paucifloris axillaribus folio multo brevioribus minute tomentellis, antheris omnibus crassis oblongis eglandulosis.

NECTANDRA *Rodiœi, Schomb. in Hook. Ic. Pl. ined.*

Arbor 60-pedalis et ultra; *truncus* erectus ramos summo apice gerens, cortice lævi, cinereo. *Ramuli* juniores, uti inflorescentia, tomento tenuissimo in sicco ferruginei, mox glabrati. *Folia* semipedalia v. longiora 2-3 poll. lata, pleraque fere, sed rarius exacte, opposita; *petiolo* canaliculato 4 lin. longo. *Paniculæ* 1-2 pollicares, a basi ramosæ, ramis primariis longiusculis apice paucifloris. *Bracteæ* in specimine delapsæ. *Pedicelli* crassiusculi, 2 lin. longi. *Flores* 2 lin. longi, expansi 3½ lin. lati, fere omnes a me examinati plus minus difformes, partibus numero irregulariter auctis. Pauci tamen, qui normales videntur, sequentia ostendunt. *Perigonii* late campanulati (subrotati?) *laciniæ* sex, inæquales, crassæ, rotundatæ, deciduæ. *Antheræ* 12, more Laurinearum quadriseriales, sessiles, oblongæ, crassæ, erecto-arcuatæ, obtusæ, puberulæ, infra apicem quadrilocellatæ, locelli ad utrumque latus duo suprapositi, in antheris 6 exterioribus majoribus subintrorsi, in 6 interioribus minoribus subextrorsi, loculo superiore sæpius minore v. magis antico interdum obsoleto. *Glandulas* nullas detexi. *Ovarium* in fundo perianthii sessile, uniovulatum. *Stylus* antheris paulo brevior, apice distincte et crassiuscule stigmatosus, in floribus difformibus sæpe abbreviatus obscure stigmatosus. *Perigonii tubus* post anthesin increscit, et ex cicatrice fructus verosimiliter cupulam format, brevem, persistentem. *Bacca* ovato-globosa, obtusa, a latere breviter compressa 3 poll. longa, carne siccando coriaceo-sub-

lignosa. *Calyx* fructifer cupuliformis, vix corrugatus, margine integro circa 10 lin. diametro.

The *Sipiri* or *Bibiru* tree, which latter is the Arawaak name, continues undivided by branches until near the top; the trunk is covered with an ash-grey smooth bark, it is quite erect, and frequently above 50 feet in height. The flowers are of a yellowish-white colour, and the fruit which follows is somewhat obovate, globular, slightly compressed, the longer extension being 7½ inches in circumference, the lesser about 6¼ inches. The pericarp is of a greyish-brown, speckled with whitish dots, hard and very brittle, and about a line thick; it is of a brownish colour, which extends only two or three lines.

The *Greenheart* tree belongs properly to the rocky soil of British Guiana, 20 to 50 miles inland, and is found in abundance on hill-sides, along the rivers Essequibo, Cuyuni, Demerara, Pomeroon, Berbice, &c.; but though it frequently occurs in those regions, I have never met with a tree of that description near the equator.

Dr. Rodie prepared from the *Bibiru* (Bebeeru) bark a solution of the sulphate of its alkali, which he has administered with the greatest success in intermittent fevers. Experiments were likewise made at the Colonial Hospital in Demerara with a decoction of the bark, where the only objection to its general use arose from the large quantity which was required, and which the fever-patient felt reluctant to swallow, and the experiments to procure the medicinal properties in a concentrated state, like the sulphate of quinine, proved fruitless.

Dr. Maclagan soon persuaded himself that any attempt to extract crystalline salts was out of the question. However, he succeeded in procuring two vegetable alkaline bodies, one of which he called *Bibirine*, the second *Sipirine*, both distinct in their properties, and the latter of which is insoluble in ether.* For the detailed account of its chemical properties I refer to Dr. Maclagan's able paper, but add here to his analysis of the general composition of the bark and seeds :—viz.

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* Subsequent experiments led Dr. Maclagan to the conclusion that there was but one alkaloid which he called Bibirine.

	Bark.	Seeds.
Alkalies (not quite pure) . .	2·56	2·20
Tannin and resinous matter .	2·53	4·04
Soluble matter (gum, sugar and salts).	4·34	9·40
Starch	....	53·51
Fibre and vegetable albumen .	62·92	11·24
Ashes, chiefly calcareous . .	7·13	0·31
Moisture	14·07	18·13
Loss	6·45	1·17
	100·	100·

It will be noted that there is almost 54 per cent starch in the fruit, and the aborigines are so well aware of this fact, that they use it in times of scarcity, as a substitute for bread. The seeds are grated for that purpose, and immersed in water, when a white starch precipitates itself, which is repeatedly washed to deprive it of its bitterness. It is afterwards mixed with decayed wood, chiefly of the Walaba tree (*Eperua falcata*), and baked into cakes. I have been under the necessity of using this substitute for Cassava; but, if prepared with ever so much attention, it is impossible to deprive it of its strong bitter taste. The Indians are sometimes obliged to live for months on it,—whether to the improvement of their health, I know not.

Before I conclude my description of the *Greenheart*, I should wish to draw attention to the great importance of the new discovered alkaloid, and its powerful action as a febrifuge remedy. Dr. Maclagan cites several instances where he has used it with great benefit in fevers and periodical headache, and he alludes likewise to the marked success with which his friend, Dr. Watts, in Demerara, employed it in intermittent fevers in the colony. I know from verbal communications with Dr. Rodie, the discoverer, that he places the greatest confidence in its efficacy, and as Dr. Maclagan alludes to a secret medicine, which made its appearance, under the name of Warburg's Vegetable Fever Drops, in the colony, and which his chemical examinations have proved to him to be a preparation of *Bibiru*, I can attest its efficacy. After I had suffered six months of intermittent fever, during my first expedition in the interior of Guiana, and which reduced me to a walking skeleton, half a dose of these drops freed me from the fever, and restored my health.

At present the tree is only felled for its timber, and the bark thrown away as useless. If there be any truth in the statement that the Peruvian Republic intend to restrict the exportation of Cinchona bark, and if further experiments should prove the *Bibiru* bark to be equally efficacious, the *Bibirine* might prove a useful and important succedaneum.

II.—The Aborigines of the interior, but chiefly the Waccawais, have from time immemorial occasionally brought fruits of a tree to the coast, which they recommend as an excellent remedy in dysentery, diarrhœa, &c., and which, in reality, are much esteemed by the colonists as a domestic remedy for these complaints. The fruits are generally divided into four quarters or into halves, and strung on strings for the convenience of drying them the better. They are of a dark brown colour, and their taste is warm and spicy. Although Dr. Bancroft has already mentioned these nuts, under the name of the *American Nutmeg*, and Mr. Hartsinck, in 1770, under *Camacou* or the *Waccawai Nutmeg*, Botanists were unacquainted with the character of the tree which produces them. It was evident from the warm aromatic taste, and the appearance of their seeds, that they came from a Laurinaceous tree; but here ended the knowledge.

When our expedition was encamped near Roraima, the Arécuna Indians brought us many of these fruits (or *Camara*, as they are called by the Arécunas) for barter, which being in a fresh state, proved that they had been only recently gathered, and on my inquiry I learned that the trees which produced them were found in abundance near the small river Mapauri. I was fortunate enough to procure flowers and

fruits, and I am now able to add the Botanical description of this useful tree, which is a new species of the genus *Acrodiclidium* of Nees von Esenbeck, to which I have given the specific name Camara.

ACRODICLIDIUM, *Nees.* — Familia LAURINEÆ. — Tribus Acrodiclidia, *Nees Laurin.* 243.

Acrodiclidium *Camara* (Schomb.); ramulis cinereis, foliis elliptico-oblongis obtuse cuspidatis utrinque glabris, thyrsulis laxis quam folia vix brevioribus, staminodiis primi et secundi ordinis obovato-spathulatis, fructu maximo cupula crassa rugosa margine lacera semi-immerso.

Acrodiclidium Camara, *Schomb. in Hook. Ic. Pl. ined.*

Inflorescentia et *ramuli* novelli pube minutissima substrigillosa canescentes, partes adultiores glaberrimæ. *Folia* 4-6 poll. longa, 1½-2 poll. lata, basi cuneata apice in acumen breve v. longiusculum obtusum producta, coriacea, opaca, petiolo 3-5 lin. longo, subdilatato. *Thyrsi* ad basin innovationum laterales, raro axillares, laxe divaricato-ramosi, ramulis laxe cymulosis plurifloris, pedicellis ultimis perigonio brevioribus. *Bracteæ* minutæ, squamæformes, caducissimæ. *Perigonium* lineam longum, linea in limbo paullo latius, in tubo brevissime strigillosum, externe glabrum; *laciniæ* sex, æquales, suborbiculatæ, pellucido-puntatæ, crassiusculæ, margine tenui. *Staminodia* sex exteriora obovato-spathulata, unguiculata, laciniis perigonii subbreviora et iis opposita, ut in *A. Brasiliensi,* quasi limbum interiorem perigonii referentia. *Stamina* tria (tertii ordinis) crasso-carnosa, subtetragono-turbinata, perigonio æquilonga, apice dorso oblique truncata, basi extus utrinque glandula majuscula ovoidea instructa; *antheræ* a filamento indistinctæ, poris duobus parvis ad angulam apicalem interiorem dehiscentes. *Stamina* quarti ordinis nulla. *Ovarium* tubo perigonii immersum, oblongum, glabrum, uniovulatum, in stylum staminibus vix breviorem, acutum transiens. *Fructus* depresso-globosus, 2-3 poll. diametro, coriaceo-baccatus, perigonio aucto cupuliformi sublignoso, rugoso, margine irregulariter breviter et obtuse lacero,

semi-immersus. *Semen* formæ fructus; *testa* coriaceo-chartacea; hilo lato orbiculato.

Species ab *Acrodiclidiis* descriptis, præter inflorescentiam laxam et perigonium latius subcampanulatum, differt imprimis fructu maximo. In *A. Brasiliensi* dicitur magnitudine seminis *Brassicæ,* in *A. Jamaicensi* pisi majoris volumine, in *A. Guianensi* et Kunthiano ignotum.

The *Camara* tree is from 35 to 40 feet high, the trunk grey, almost smooth, and from 8 to 10 feet in circumference near the base. It possesses a tendency to throw out flat or tabular projections near the lower part of the trunk, similar to *Mora excelsa* and *Aspidospermum excelsum.* The wood is yellow, splintery, and of a bitter aromatic taste; the branches divaricate, and are grey. The flowers cream-coloured. The globose and depressed fruit resembles much the *Greenheart* (*Nectandra Rodiei*), but it is perfectly smooth, of a whitish-green colour, and about half its size, immersed in the brownish cupula; while in the former it merely adheres to the short cupula.

Most of the flowers of the thyrsus prove abortive, and generally only one fruit or, at the most, two come to maturity.

It appears this tree is restricted to the sandstone regions north and south of Roraima, under the fifth parallel of latitude. The Indians generally collect the fruits when they drop from the trees, and dividing them in halves or quarters, according to their size, string them to a thread and hang them up in the sun to dry. The Waccawais, Arecunas, and Sarakong Indians, make them an article of traffic, and exchange them for other goods with the Indians of the coast regions, and sell them for money to the Creoles, who (as Hartsinck has already observed) place great confidence in their virtue. Dr. Hancock mentions the large aromatic and astringent fruit as one of the most efficacious remedies, in diarrhœa, dysentery, colic and spasmodic pains.

Diagnoses MUSCORUM *quorundam* JAVANICORUM, *auctore* DR. C. MONTAGNE.*

HOOKERIA, *Sm.*

1. Hookeria *seminervis*, Mont. mss.; caule repente compresso, foliis sexfariis spathulatis planis, lateralibus patentibus, intermediis patenti-erectis adpressis omnibus marginatis nervo medio ad vel supra medium evanido instructis, capsula. . . . ?

HAB. Ad cortices arborum, in Java insulæ Prov. Buitenzorg, (*Herb. Miq.*)

Ab *Hook. quadrifaria* differt caule repente, foliis magis elongatis marginatis et nervo debili, nunquam ultra medium progrediente. *H. microcarpæ* etiam affinis, a qua foliis marginatis recedit.

2. Hookeria *papillata*, Mont. mss.; caule repente pinnatim diviso, foliis quadrifariis oblongis apice retuso-acuminatis minute denticulatis subtus papillosis, nervis binis parallelis crassis ad apicem instructis, capsula horizontali oblonga sub ore constricta, operculo conico rostrato, rostro recto.—Folia siccitate longitrorsum plicata crispulaque.

HAB. Cum præced. mixta.

3. Hookeria *Philippinensis*, Mont. (conf. Lond. Journ. of Botany).

HAB. In Javæ Prov. Buitenzorg (*Hb. Miq.*)

HYPNUM, L.

1. Hypnum *strepsiphyllum*, Mont. mss.; caule procumbente vage irregulariterque ramoso, foliis (fuscescenti-olivaceis) undique imbricatis subhomomallis lanceolatis basi utrinque auriculatis, auricula grosse parallelogrammi-reticulata, cæterum lineari-areolatis enerviis, a medio ad apicem usque cucullato-convolutis, patentibus pungentibusque, siccitate striatulis, perichætialibus (pallidis) ovato-oblongis

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* In litteris ad Dr. Miquel, qui communicavit.

filiformi-attenuatis vel potius acuminatis erectis, capsula oblongo-urceolata nutante horizontalique, operculo conico-rostrato, rostro longissimo obliquo.

Similis *Leskeæ pungenti*, at folia diversa et peristomium *Hypni*. Folia ut in meo *Dicrano spirophyllo* ita spiraliter convoluta ut cucullum papyraceum (gallice *cornet de papier*) æmulent.

HAB. In cortice arborum, in insulæ Java Prov. Buitenzorg (*Hb. Miq.*)

2. Hypnum *scaberulum*, Mont. mss.; minutum, caule decumbente vage ramoso, ramis inæqualibus apice incurvis, foliis dense imbricato-subdistichis e basi oblonga acuminato-subulatis falcato-secundis enerviis apice serrulatis, perichætialium conformium subula recurva, pedunculo muriculato! capsula urceolata horizontali, operculo aciculari longissimo recto.—Ab omnibus *Hypnis* seta scabra foliisque secundis cæt. maxime diversum et cum nullo confundendum.

HAB. Ut præcedens.

3. Hypnum *trismegistum*, Mont. mss.; squarrosulum, caule primario decumbente, divisionibus subdendroideis erectis vage subpinnatimque ramosis, ramis attenuato-cuspidatis, foliis caulinis sparsis, rameis dense imbricatis patentibus, e basi ovata in acumen acutum attenuatis enerviis lineari-areolatis, pedunculo longissimo, capsula ovato-oblonga basi subgibba nutante, operculo conico fere dimidiam capsulam æquante, ciliolis peristomii interioris semper ternis. —Species *H. brevirostro* affinis a quo forma et areolatione foliorum nec non habitu diversissima recedit.

HAB. Crescit ad cortices, in Javæ Prov. Buitenzorg (*Hb. Miq.*)

WEISSIA, *Hedw.*

1. Weissia *Miqueliana*, Mont. mss.; caule primo simplici erecto brevi, bienni prostrato innovante, innovatione adscendente, foliis erecto-patentibus, supremis homomallis lanceolatis carinatis margine recurvis nervo sub apicem evanido percursis apice subserrulatis, capsula oblongo-cylindracea inclinata (fusca), operculo conico-rostrato obliquo capsulam

fere æquante, dentibus obtusis basi bitrabeculatis, cæterum irregulariter cellulosis opacis.—Nullam *Weissiam* descriptam novi quacum nostram comparem.

HAB. Crescit ad terram nudam in Prov. Buitenzorg Javæ, (*Hb. Miq.*)

RADULA, *Dum.* (Jungermannia, *L.*)

1. Radula *campanigera*, Mont. mss.; caule prostrato elongato distiche subpinnatim ramoso, foliis ovato-orbiculatis subtus ad basin complicatis, lobulo oblongo minore angulis rotundatis, perianthio apice dilatato campaniformi. A *Radulis formosa* et *Boryana*, quæ Floræ Javanicæ, lobulo foliorum obtuso; a *R. reflexa* et *Xalapensi N.* et *M.* forma perianthii, a *R. complanata* Europæa tandem hac ultima nota nec non ramificatione longitudineque spicarum mascularum satis recedit.

HAB. Crescit supra cortices arborum inter alios muscos, Javæ (*Hb. Miq.*)

LICHENES ANTARCTICI; *being characters and brief descriptions of the new* LICHENS *discovered in the Southern circumpolar regions, Van Diemen's Land and New Zealand, during the Voyage of H.M. Discovery Ships Erebus and Terror; by* DR. J. D. HOOKER, *and* DR. THOMAS TAYLOR.

"The uniformity of rocks as they appear above the soil, in all parts of the earth, has been well ascertained by geologists. Atmospheric influences disintegrate their surface. The atmosphere and rocks being identical in all latitudes, so must the first layers of decomposing matter on the surface of the latter be. Now such being the precise places that Lichens select for their seat, it would follow that the geographical distribution of the species should be extended to wider limits than that of any other tribe of plants. Accordingly, we find in the list of Antarctic Lichens, a great number common to our northern hemisphere. But not the species only, their

modes of varying seem also to follow the same law. Thus both in North and South Polar regions, we observe Parmelia *plumbea,* Ach., passing into Parmelia *rubiginosa,* Ach.; this again into Lecidea *thriptophylla,* Ach.; and finally the latter subsiding into Collema *nigrum,* Ach.; all identified by the same structure of their *apothecia,* as well as by the singular blue substratum of the *thallus.* We find the Acharian varieties of many of the European *Cenomycides* re-appearing in Antarctic regions. Those *Strictæ,* the patricians among Lichens, form a striking feature in the cryptogamic vegetation of the south. There they occur, not only superior in size and more numerous in species, but, contrary to what happens in Europe, they almost always bear *apothecia.* This fertility extends to other genera; so Parmelia *diatrypa,* Ach., nearly always barren with us, is found with crowded *apothecia,* in the south. In the following list, the genera of Acharius have been adopted, they seem ample for the purpose. To say nothing of more modern proposals, Acharius himself seems to have multiplied his genera unnecessarily. Thus he founded *Variolaria, Lepraria* and *Isidium* upon characters drawn from their buds and not from their *apothecia,* which were unknown to him. As these have been detected, those genera have subsided into *Lecidea* and *Lecanora. Spiloma* and *Calicium* and some new genera allied to the latter, and lately proposed, are all truly *Fungi,* which is evident, not only from their selecting decomposing organic matter whereon to grow, but more evidently from the internal structure of their parts of reproduction."—T. T.

1. SOLORINA, *Ach.*

1. S. *aurantiaca,* n. sp.; thallo foliaceo tenui lobato cinereo madore glaucescenti subtus albidiori fibrilloso, lobis rotundatis integerrimis, apotheciis sessilibus planis tumidulis aurantiacis.

HAB. New Zealand.

Thallus 1-2 inches wide, when moistened swelling up with obtuse ridges; beneath the lobes the whitish fibres are placed in concentric series. Structure of the *apothecia* different from that of its congeners. The *lamina* colourless and transparent, forming a shallow layer in which are perpendicular *thecæ*, through the pellucid *lamina* is seen a dense stratum of subjacent orange-coloured matter, which rests on green *parenchyma* continuous with the *thallus*.

2. LECIDEA, *Ach.*

2. L. *atro-alba*, Ach.; *L. U. p.* 162.
HAB. New Zealand and Cockburn Island.
3. L. *geographica*, Hook.; *Engl. Fl. v.* 5, *p.* 178.
HAB. Falkland Islands and Kerguelen's Land.
4. L. *stellulata*, Tayl.; *in Flor. Hib. p.* 118.
HAB. Falkland Islands and Kerguelen's Land.
5. L. *confluens*, Ach.; *L. U. p.* 174.
HAB. Kerguelen's Land and Cape Horn.
6. L. *petræa*, Ach.; *L. U. p.* 155.
HAB. New Zealand.
7. L. *sulphurea*, Ach.; *Syn. p.* 37.
HAB. Falkland Islands.
8, L. *rivulosa*, Ach.; *Syn. p.* 28.
HAB. Kerguelen's Land.
9. L. *marmorea*, Ach.; *L. U. p.* 192.
HAB. New Zealand.
10. L. *speirea*, Ach.; *L. U. p.* 184.
HAB. New Zealand.
11. L. *geomæa*, Tayl.; *in Flor. Hib. p.* 124.
HAB. Lord Auckland's group and Cape Horn.
12. L. *elæochroma*, Ach.; *Syn. p.* 18.
HAB. Falkland Islands.
13. L. *parasema*, Ach.; *Syn. p.* 17.
HAB. Cape Horn.
14. L. *aromatica*, Ach.; *L. U. p.* 168.
HAB. Kerguelen's Land.
15. L. *pulverea*, Borr.; *Engl. Bot. t.* 2726.
HAB. Falkland Islands.

16. L. *scabra*, Tayl.; *in Flor. Hib. p.* 121.

Hab. Falkland Islands.

17. L. *quadricolor*, Borr.; *Engl. Bot. t.* 1185.

Hab. Falkland Islands.

18. L. *vernalis*, Ach.; *L. U. p.* 198.

Hab. New Zealand.

19. L. *rupestris*, Ach.; *L. U. p.* 206.

Hab. New Zealand.

20. L. *disseminata*, n. sp.; verrucis in substratum tenue nigricans tartareis albidis sparsis subrotundis subrugosis foraminulosis, apotheciis confertis demum immarginatis confluentibus disco rufescenti, lamina pellucida crassa insuper substantiam albam corticalem posita.

Hab. New Zealand.

Patch indeterminate. Warts of the size of poppy-seeds, *apothecia* a little larger, their thin border observable only in the young state. It is allied to *Lecanora involuta*, Tayl.

21. L. *glaucopa*, n. sp.; crusta effusa tenui contigua sublepros albido-cinerea nigro-limitata, gemmis minutis albidis confertis glauco-punctatis, apotheciis sessilibus sparsis intus albidis disco nigro-pruinoso margine tenui atro undulato.

Hab. Cape Horn, on bark.

1-2 in. wide, surface uneven; buds in minute whitish *papulæ*, each usually tipped with a single glaucous point observable in the moist state. A vertical section of the *apothecium* shews a thin pruinose black disk, the *lamina* colourless and transparent, resting on white cortical matter; the black cup containing the *lamina* is deficient below it.

22. L. *mamillata*, n. sp.; thallo cæspitoso fusco-olivaceo crustaceo squamoso subtus centro affixo, laciniis adscendentibus crenatis, gemmis confertissimis elongato-granulosis demum ramosis apice fuscis, apotheciis sessilibus atris disco demum convexo margine tenui atro demum obsoleto.

Hab. Falkland Islands.

Tuft one-tenth of an inch high; *substratum* thin, black, investing; *apothecia* large in proportion to the scale on which each is borne.

23. L. *albido-plumbea*, n. sp.; crusta leprosa tenuissima albido-plumbea nigro-limitata, apotheciis sparsis subsessilibus, disco atro-pruinoso margine tenui undulato intus rufescentibus.

HAB. New Zealand, on bark.

Patches several inches wide, dull whitish lead-coloured; *thallus* under a lens appearing broken into very minute whitish scales. *Apothecia* few, scattered, the black shell is continued beneath the *lamina*, which is a dusky brown. Differs from L. *parasema*, Ach., by its scaly *thallus*, and scattered *apothecia*.

24. L. *marginiflexa*, n. sp.; crusta albido-glaucescenti tenui minute rimosa demum leprosa nigro-limitata, apotheciis majoribus confertis madore purpureo-nigris disco pruinoso convexo margine tenui flexuoso.

HAB. New Zealand, on bark.

Crust very white, rather smooth: pruina of the *apothecia* when dry whitish, the disk flat, when moistened convex and of a purple black colour. The *lamina* is shallow, whitish and pellucid, resting on an equally shallow layer which is brown and lies on much white cortical matter.

3. GYROPHORA, *Ach.*

25. G. *stygia*, n. sp.; thallo orbiculari lobato undulato plicato atromurino siccitate atro subtus nudo elevato-punctato centro affixo, gemmis centralibus planis minutis.

HAB. Falkland Islands.

1-2 inches wide, rigid when dry. The upper surface is destitute of the elevated points that occur in G. *murina*, Ach.; no *apothecia* seen.

4. VERRUCARIA, *Ach.*

26. V. *nitida*, Schrad.; *Journ.* 1801, *fascic. I. p.* 79.

HAB. New Zealand.

27. V. *dermatodes*, Borr.; *Engl. Bot. t.* 2607. *f.* 2.
HAB. New Zealand.

28. V. *gelida*, n. sp.; thallo umbrino-fusco granulato margine subeffigurato tenuissimo, granulis tumidis confertis subpruinosis madore subgelatinosis, substrato tenuissimo atro, apotheciis immersis papillula atra prominentibus intus rufescenti-cinereis.
HAB. Cockburn Island.

Patches crowded, about ¼ inch wide, appearing as a dark olive-brown coarse powder; the granules are distinct under a lens, the larger and more central are roundish and contain each an *apothecium* tipped with black, the marginal are more elongated, somewhat effigurate, at the very extremity they are thin and investing; when moistened the granules are gelatinous, subpellucid, internally greenish. The black shell does not pass beneath the *nucleus*. The crust is far less polished, less continuous and more uneven than in *V. umbrina*, Ach., while the *nucleus* is paler.

5. ENDOCARPON, *Ach.*

29. E. *pulchellum*, Hook. *Engl. Flor. v.* 5. *p.* 158.
HAB. New Zealand.

30. E. *fragile*, n. sp.; thallo cartilagineo lobato rufescente cinereo subtus pallidiore, lobis imbricatis erectiusculis planis oblongis angulatis subforaminulosis, gemmis granulatis marginalibus.
HAB. Van Diemen's Land.

Patches 1-2 inches wide, scarcely ½ inch high. The fronds rising from a narrow base are crowded, plicato-convolute or imbricated, umber-coloured; edges of the lobes submarginate, variously angulate; in the dry state very fragile. Sometimes large openings may be observed in the lobes, apparently arising from the union of expanding buds. No fruit observed.

6. PORINA, *Ach.*

31. P. *fallax*, Ach. *Syn. p.* 110.

HAB. Falkland Islands and Cape Horn.

32. P. *granulata*, n. sp.; thallo tartareo granulato albido, granulis subrotundi rugosis confertis fertilibus majoribus poris 1-5 notatis, nucleis pellucidis pallide lutescentibus.

HAB. Lord Auckland's group.

2 inches high; sometimes stained with dark blood-red; *apothecia* at length flat; the moistened *thallus* pellucid.

7. THELOTREMA, *Ach.*

33. T. *lepadinum*, Ach. *L. U. p.* 312.

HAB. Lord Auckland's group and New Zealand.

8. URCEOLARIA, *Ach.*

34. U. *endochlora*, n. sp.; crusta albido-cinerea tenui-rimosa inæquabili nigro-limitata nigro-punctata, apotheciis immersis planis atris rotundato-difformibus margine thallode tenui madore obsoleto, lamina tenuissima virescenti.

HAB. Kerguelen's Land.

A few inches in diameter; sometimes of a cream colour; aged specimens are greenish-white. The structure of the *apothecium* is peculiar. The figure is that of an inverted cone; its disk consists of a black *pruina* beneath which is an exceedingly shallow *lamina* of a glaucous green colour, resting on an inverted cone of black matter, extending to the bottom of the *thallus*. It has a strong affinity with Bæomyces *anomalus* Tayl. in Flor. Hib.

35. U. *erubescens*, n. sp.; thallo crustaceo rimoso areolato inæquabili ruguloso rufescenti-albido nigro-limitato, apotheciis confertis immersis concaviusculis difformibus subpellucidis olivaceis disco scabrido nigro-punctato, margine thallode lacero-crenulato.

HAB. Falkland Islands.

Colour of the *thallus* superficial, not constant, of the interior of the crust whitish. *Lamina* pellucid, resting on a layer of white matter.

36. U. *macrophthalma*, n. sp.; crusta glabra tenuissime rimosa pallide testacea verrucis planis rufescentibus rimosis con-

spersa margine effigurata atque nigro-limitata madore minutissime rugosa, apotheciis confertis adpressis siccitate immersis madore elevatis planis fusco-incarnatis margine thallode elevato tenui crenulato atque undulato.

HAB. Kerguelen's Land.

Crust wide; *apothecia* of the size of turnip-seed, assuming a purplish flesh-colour when moistened. Approaches U. *Acharii* Ach.

9. LECANORA, *Ach.*

37. L. *atra*, Ach.; *L. U. p.* 344.
HAB. Falkland Islands and Cape Horn.
38. L. *exigua*, Hook.; *Engl. Flor. v.* 5. *p.* 187.
HAB. Falkland Islands and New Zealand.
39. L. *ventosa*, Ach.: *L. U. p.* 399.
HAB. Falkland Islands.
40. L. *hæmatomma*, Ach.; *L. U. p.* 388.
HAB. Falkland Islands.
41. L. *candelaria*, Ach.; *L. U. p.* 416.
HAB. Falkland Islands.
42. L. *murorum*, Ach.; *L. U. p.* 433.
HAB. Falkland Islands and Cape Horn.
43. L. *gelida*, Ach.; *L. U. p.* 428.
HAB. Kerguelen's Land.
44. L. *glaucoma*, Ach.; *L. U. p.* 362.
HAB. Falkland Islands.
45. L. *tartarea*, Ach.; *L. U. p.* 371.
HAB. Falkland Islands, Kerguelen's Land and Cape Horn.
46. L. *parella*, Ach.; *L. U. p.* 370.
HAB. Falkland Islands.
47. L. *miniata*, Ach.; *L. U. p.* 434.
HAB. Cockburn Island and Falkland Islands.
48. L. *subfusca*, Ach.; *L. U. p.* 393.
HAB. Falkland Islands and Kerguelen's Land.
49. L. *Daltoniana*, n. sp.; thallo flavido-cinereo centro defixo lobis radiantibus in cæspitem convexum subdivisis coacervatis cuneatis margine deflexis, gemmis marginalibus gra-

nulatis, apotheciis confertis substipitatis concavis disco fusco-olivaceo, margine gemmifero demum incurvo crenulato-lobato.

Hab. Cockburn Island.

In small cushions, scarcely exceeding ½ inch in diameter, or ¼ inch in height. *Thallus* entirely concealed under the crowded *apothecia* whose dark olive disks are contrasted with their yellowish ash-coloured crenulate margins. It is singular for a species of this genus to be fixed to the subjacent soil by a central minute disk. A vertical slice of the moistened apothecium shows, beneath a dark olive pruinose disk, the pale yellowish, very shallow, pellucid *lamina*, resting on a thallodal layer.

50. L. *chrysosticta*, n. sp.; crusta tenui albida nigro-limitata, gemmis granulatis confertis, apotheciis confertis concaviusculis disco flavo-lutescenti pruinoso margine gemmis crenulato.

Hab. New Zealand, on bark.

Crust several inches wide. The investing crust is studded with large granular buds which sometimes bear on their tops minute orange spots, the rudiments of *apothecia*. The disk consists of a coarse yellow *pruina*, covering a deep tawny *lamina*. The shields are much larger than those of Lecidea *ferruginea*, Hook., and have a conspicuous thallodal border.

51. L. *versicolor*, n. sp.; substrato tenui adnato atro, thalli squamulis subrotundis planis crenulatis albidis demum flavis confertis lævibus, apotheciis majoribus sessilibus concavis disco nigro-pruinoso margine integerrimo subincurvo.

Hab. Lord Auckland's group, on bark.

Patches scarcely 1 inch wide; margin black, being a continuation of the *substratum*. *Apothecia* larger than the scales. Under a black pruinose disk is a shallow colourless and transparent *lamina*, resting on a yellowish thallodal matter.

52. L. *microphthalma*, n. sp.; crusta tenui submembranacea albo-cinerascente nigro-limitata rimosa gemmis minutis

albidis granulosis, apotheciis minutis sparsis madore convexis intus albidis disco nigro margine albido integerrimo demum gemmifero.

HAB. Cape Horn, on bark.

Crust scarcely ½ inch wide, soft, whitish ash-coloured, when moistened somewhat tawny on the edges of the *rimæ*. *Apothecia* scarcely observable with the naked eye; their disk consists of a dense black *pruina*, the *lamina* is quite white and transparent. The *thallus* resembles that of Lecidea *parasema*, Ach.

53. L. *dichroa*, n. sp.; crusta tumido-granulata areolata ambitu subeffigurata sordide aurantiaca gemmis minutissimis vix elevatis olivaceis conspersa, apotheciis sessilibus disco fusco-rufescenti margine subintegerrimo crasso undulato, gemmis punctatis.

HAB. Kerguelen's Land; on rocks.

Patches scarcely 1 inch wide, rugged with tumid granules; *apothecia* rather crowded, yet few. Immersed in water it immediately imparts to the fluid a fine citron colour.

10. PARMELIA, *Ach.*

54. P. *parietina*, Ach.; *L. U. p.* 463.

HAB. New Zealand.

55. P. *plumbea*, Ach.; *L. U. p.* 466.

HAB. New Zealand and Van Diemen's Land.

56. P. *rubiginosa*, Ach.; *L. U. p.* 467.

HAB. Lord Auckland's group and Falkland Islands, New Zealand and Van Diemen's Land.

57. P. *saxatilis*, Ach.; *L U. p.* 469.

HAB. Falkland Islands and Cape Horn.

58. P. *enteromorpha*, Ach.; *L. U. p.* 494.

HAB. Falkland Islands, Cape Horn, and Van Diemen's Land.

59. P. *circinnata*, Ach.; *L. U. p.* 495.

HAB. Cape Horn.

60. P. *conspersa*, Ach.; *L. U. p.* 486.

Hab. Van Diemen's Land, Falkland Islands, and New Zealand.

61. P. *reticulata,* Tayl.; *in Flor. Hib. p.* 148.

Hab. Falkland Islands, New Zealand, and Van Diemen's Land.

62. P. *leucomela,* Ach.; *Meth. Lich. p.* 256.

Hab. New Zealand.

63 P. *speciosa,* Ach.; *L. U. p.* 480.

Hab. New Zealand.

64. P. *proboscidea,* Tayl. *in Flor. Hib. p.* 143.

Hab. New Zealand.

65. P. *perlata* Ach.; *L. U. p.* 458.

Hab. New Zealand and Van Diemen's Land.

66 P. *physodes,* Ach.; *L. U. p.* 492.

Hab. Van Diemen's Land.

67. P. *diatrypa,* Ach.; *L. U. p.* 493.

Hab. New Zealand.

68. P. *sulcata,* Tayl.; *in Flor. Hib. p.* 145.

Hab. Van Diemen's Land.

69. P. *spinosa,* n. sp.; thallo minuto implexo aurantiaco procumbente subpinnatim ramoso laciniis anguste linearibus flexuosis, gemmis concoloribus marginalibus spiniformibus, apotheciis concoloribus subpedicellatis margine subintegerrimo extus gemmas spiniformes demittentibus.

Hab. Van Diemen's Land.

This is one of the *Borreræ* of Acharius, a genus that passes into *Parmelia.* Patches very minute, of the reddish-orange colour of Lecanora *murorum,* Ach. *Thallus* foliaceous, its segments linear; the spiniform buds are conspicuous under a lens.

70. P. *Tasmanica,* n. sp.; thallo pallide sulphureo orbiculato obtuse complicato lævigato subtus fuscescente breviter fibrilloso laciniis subsinuato-lobatis apice subbilobis, gemmis centralibus plano-granulatis demum confluentibus, apotheciis centralibus valde concavis disco badio margine tumido incurvo subintegerrimo.

Hab. Van Diemen's Land.

Patches several inches wide, very uneven with elevated rounded foldings and depressions. In aged specimens the thallus is wrinkled towards the centre, from the confluence of the buds. *Apothecia* always concave and cup-shaped. The stipitate buds and the wider and more elongated divisions of the thallus distinguish this species from P. *conspersa*, Ach.

71. P. *tenuirima*, n. sp.; thallo glauco-cinereo madore virescenti sinuato-lobato subtus atro-fibrilloso, lobis angulato-rotundatis concaviusculis, gemmis minutis sparsis linearibus pulverem album effundentibus, apotheciis subpedicellatis demum planis disco rufo-castaneo margine tenui incurvo extus gemmiferis.

HAB. Van Diemen's Land.

Thallus several inches wide; often reddish-brown towards the centre, uneven, rough beneath with dense, short, black fibres. Aged *apothecia* sometimes 1 inch wide. Differs from P. *sulcata*, Tayl. by the wider, smoother, and less incised lobes, the more scattered and more minute buds and the browner colour of the aged *thallus*.

72. P. *rutidota*, n. sp.; thallo flavicante orbiculari lævi centro corrugato inciso-lobato lobis rotundatis crenatis subtus atris corrugatis, gemmis marginalibus plano-granulatis statim in thallum expandentibus, apotheciis centralibus confertis concavis disco rufescenti margine tenui demum crenulato.

HAB. Van Diemen's Land.

Thallus 3-4 inches wide, closely adhering to the bark of trees; uneven with longitudinal folds; the central portion is closely and minutely wrinkled, and is tawny. The *thallus* of P. *caperata*, Ach. is far larger, and of a lighter yellow, while the buds are in cup-shaped eruptions of the *thallus*.

73. P. *splachnirima*, n. sp.; thallo utrinque albido glabro sinuato-lobato, lobis rotundatis crenatis marginibus adscendentibus, gemmis marginalibus plano-granulatis statim in thallum expandentibus, apotheciis centralibus planiusculis disco carneo albo-pruinoso margine tenui undulato.

Hab. Van Diemen's Land.

Thallus from a narrow base divaricating into lobes, colour unchanged by moisture. *Apothecia* flesh-coloured, the disk pruinose and at length wrinkled.

11. Cetraria, *Ach.*

74. C. *glauca*, Ach.; *L. U. p.* 509.

Hab. Cape Horn.

75. C. *Islandica*, Ach.; *L. U. p.* 512.

Hab. Cape Horn.

76. C. *inflata*, n. sp.; thallo in cæspitem orbicularem congesto pallidissime flavo divaricato-dichotomo lobis fistulosis intus stuppeis foraminulosis ultimis acuminatis, apotheciis terminalibus substipitatis concavis disco concolore pruinoso margine inflexo integerrimo.

Hab. Lord Auckland's group.

Two inches high; sometimes stained with dark blood red; *apothecia* at length flat; the moistened *thallus* pellucid; the ultimate divisions are disproportionately narrow.

77. C. *lacera*, n. sp.; thallo fusco-viridi subtus albido-rufescenti erecto ex angusta basi dilatato sinuato-ramoso lobulis linearibus subtruncatis, gemmis marginalibus statim linearibus planis, apotheciis adpressis planis aterrimis margine subevanescente.

Hab. New Zealand.

1-2 inches high; appearing to the naked eye rugged, broken and unequal in size; *thallus* substipitate; lobes concave, becoming greener when moistened. The nature of the buds will easily distinguish this species from C. *Islandica*, Ach.

12. Sticta, *Ach.*

78. S. *damæcornis*, Ach.; *L. U. p.* 446.

Hab. Lord Auckland's group and Van Diemen's Land.

79. L. *scrobiculata*, Ach.; *L. U. p.* 453.

Hab. Falkland Islands and Van Diemen's Land.

80. S. *fuliginosa*, Ach.; *L. U. p.* 454.

HAB. Falkland Islands.

81. S. *crocata*, Ach.; *L. U. p.* 447.

HAB. Falkland Islands, Cape Horn, New Zealand and Van Diemen's Land.

82. S. *orygmæa*, Ach.; *L. U. p.* 449.

HAB. Cape Horn, New Zealand and Van Diemen's Land.

83. S. *obvoluta*, Ach.; *L. U. p.* 452.

HAB. Statenland. (*Menzies.*)

84. S. *glabra*, n. sp.; thallo fulvo-olivaceo nudo glabro inciso-lobato subtus nudiusculo, lobis concavis lobulis brevibus subbinis rotundatis gemmis marginalibus minutis planis oblongis sorediis minutis albidis margine fuscis, apotheciis marginalibus subsessilibus concavis extus villosis disco fusco-olivaceo demum nigro margine lacero gemmifero.

HAB. Lord Auckland's group, Campbell's Island, Falkland Islands, Cape Horn and Van Diemen's Land.

A span or more wide; unaltered by moisture, *apothecia* a little larger than turnip seed. Margins of the lobes raised and much waved. Falkland Island specimens have the lobes very wide.

85. S. *cellulifera*, n. sp.; thallo fulvo-olivaceo orbiculari apices versus aquilino glabro lacunoso-reticulato radiatim inciso-lobato lobulis sinuatis subdichotomis latioribus subtus subvillosis, margine integerrimis sorediis punctiformibus albidis demum concavis, gemmis ad areolam juga confertis minutis granulosis depressis subconfluentibus, apotheciis marginalibus subsessilibus plano-concavis extus villosis disco nigro margine subintegerrimo.

HAB. Campbell's Island, Lord Auckland's group and New Zealand.

A span or more wide; *apothecia* one-tenth of an inch wide. Allied to S. *pulmonaria*, Ach. New Zealand specimens are of a dusky olive colour.

86. S. *linearis*, n. sp.; thallo stellato subdichotomo fusco-glacescenti apices versus olivaceo virescenti glabro lacunoso-reticulato subtus fusco subvilloso lobis linearibus apice

bifidis lobulis acutiusculis, gemmis marginalibus confertis granulosis vix elevatis subconfluentibus, cyphellis concoloribus pulverem albidum effundentibus, apotheciis sessilibus submarginalibus disco atro margine lacero-crenulato.

HAB. Lord Auckland's group and Van Diemen's Land.

A span long; ridges of the lobes transverse, curved; lobes nearly ½ inch wide; *apothecia* few, a little larger than turnip seed. Lobes sometimes one inch, sometimes only one line wide.

88. S. *impressa*, n. sp.; thallo substellato lineari-lobato albido-olivaceo lacunoso subtus subrufo lobis subpatentibus truncatis, sorediis pallide flavis punctiformibus convexis apice impressis, gemmis marginalibus planis subrotundis, apotheciis confertis marginalibus plano-convexis disco nigro margine gemmis coronato.

HAB. Lord Auckland's group, Campbell Island, Falkland Islands and New Zealand.

89. S. *flavicans*, n. sp.; thallo expanso inciso-lobato glauco flavescenti-virescenti nudo glabro lobis rotundatis subintegerrimis subtus rufo-flavis nudiusculis, gemmis marginalibus confertis elongatis granulatis statim explanatis, sorediis minutis sparsis flavis, apotheciis stipitatis concavis extus lanuginosis disco rufo-atro margine subintegerrimo.

HAB. Falkland Islands, Cape Horn and New Zealand.

Nearly 1 foot wide. Towards the centre the *thallus* is sometimes rugose, but never scrobiculato-lacunose as in S. *orygmæa*, Ach.; besides the *soredia* are fewer, the *apothecia* receive a footstalk from the pinched up *thallus*, leaving a corresponding cavity on the inferior surface, and they are not naked exteriorly as in the Acharian species.

90. S. *coriacea*, n. sp.; thallo coriaceo rufescenti-cinereo margine subtusque albido-villoso celluloso-scrobiculato, lobulis margine decurvis subcrenatis subtus concoloribus, gemmis marginalibus planis villoso-ciliatis, cyphellis albis concavis marginatis, apotheciis sessilibus concavis extus villosis disco rufescenti-nigro margine incurvo.

HAB. New Zealand.

Several inches wide; *thallus* thick, not shining, pale ochrey brown, very uneven, the central parts ascending, the margins deflexed; young *apothecia* nearly closed up by the incurved villous border.

91. S. *latifrons*, A. Rich.; *Flor. N. Z. p.* 27, *t.* 8, *f.* 2.

HAB. New Zealand.

92. S. *cinnamomea*, A. Rich.; *Flor. N. Z. p.* 27, *t.* 8. *f.* 3.

HAB. New Zealand.

93. S. *carpoloma*, A. Rich.; *Flor. N. Z. p.* 30, *t.* 9, *f.* 1.

HAB. New Zealand.

94. S. *chloroleuca*, n. sp.; thallo submembranaceo pallide virenti lævigato subtus albido corrugato, siccitate cinereo lobis subimbricatis rotundatis lobulatis crenatis, gemmis granulatis statim stipitatis atque explanatis erectiusculis confertis, sorediis minutis albidis.

HAB. New Zealand.

Thallus several inches wide, the lobes concave, smooth, buds expanding into linear, erect, crowded and branched *laciniæ*, affording a decisive diagnostic character between it and *S. herbacea*, Sch.; no *apothecia* were found.

95. S. *cinereo-glauca*, n. sp.; thallo glabro cinereo-glauco hic illic paullo sinuato-lobato crenato madore fuscescenti subtus rufescenti, gemmis marginalibus planis rotundatis integerrimis, cyphellis planis concoloribus, apotheciis centralibus confertis disco rufo margine tenui gemmis minutis subcrenulato.

HAB. New Zealand.

Patches 5-6 inches wide; lobes 1-2 inches long, pale ochrey brown beneath. The buds may be detected on the margins of the *apothecia* as minute, flat, lacerated, pale membranes, also on the edges of the lobes. *Cyphellæ* shallow, pale-brown.

96. S. *rubella*, n. sp.; thallo pallide rubello utrinque villoso substellato inciso-lobato, lobis oblongis rotundatis lacero-crenatis sublacunosis, gemmis granulatis tomentosis, demum pulverem flavum emittentibus, sorediis flavescentibus.

HAB. Van Diemen's Land.

Thallus 5-6 inches wide; reddish, especially in the younger parts; uneven; covered with down on both surfaces, and especially the upper, yet in some lobes this downiness is obsolete. The fracture of the *thallus* is bright yellow. No *apothecia* were found.

13. PELTIDEA, *Ach.*

97. P. *canina,* Ach. *L. U.* p. 517.
HAB. Falkland Islands and Kerguelen's Land.
98. P. *polydactyla,* Ach. *L. U.* p. 519.
HAB. Lord Auckland's group and Campbell Island.
99. P. *venosa,* Ach. *L. U.* p. 514.
HAB. Kerguelen's Land.

The specimens are barren, and we are thus rather doubtful of the precise species; flat granular buds are present at the margins, and the *thallus* is more smooth beneath than in European specimens.

100. P. *horizontalis,* Ach. *L. U.* p. 515.
HAB. Kerguelen's Land.

14. NEPHROMA, *Ach.*

101. N. *cellulosa,* Ach. *L. U.* p. 523.
HAB. Cape Horn.

15. DUFOUREA, *Ach.*

102. D. *collodes,* n. sp.; podetiis erectis basi tumidis cylindraceis sursum explanatis subramosis perforatis subpellucidis flavescenti-albidis, apotheciis minutis conglomeratis sessilibus fuscis marginatis.
HAB. Campbell's Island, Lord Auckland's group, Falkland Islands, Cape Horn, New Zealand, and Van Diemen's Land.

The thallodal margin of the *apothecia* at length assumes the colour of the disk; *podetia* smooth, pellucid when moistened.

16. CENOMYCE, *Ach.*

103. C. *coccifera,* Ach.; *L. U. p.* 269.

Hab. Falkland Islands and Cape Horn.

104. C. *gracilis*, Ach.; *L. U. p.* 550.

Hab. Falkland Islands and Van Diemen's Land.

105. C. *deformis*, Ach.; *L. U. p.* 538.

Hab. Falkland Islands.

106. C. *fimbriata*, Ach.; *L. U. p.* 535.

Hab. Falkland Islands and Cape Horn.

107. C. *cariosa*, Ach.; *L. U. p.* 567.

Hab. Cape Horn.

108. C. *ecmocyna* var. *δ subulata*, Ach.; *L. U. p.* 550.

Hab. Cape Horn and Van Diemen's Land.

109. C. *allotropa* var. *verticillata*, Ach.; *L. U. p.* 555.

Hab. Cape Horn, Falkland Islands, New Zealand and Van Diemen's Land.

110. C. *retipora*, Ach.; *Syn. p.* 248.

Hab. New Zealand and Van Diemen's Land.

111. C. *bacillaris*, Ach.; *Syn. p.* 266.

Hab. New Zealand.

112. C. *cervicornis*, Ach.; *L. U. p.* 531.

Hab. New Zealand.

113. C. *sparassa*, Ach.; *Syn. p.* 273.

Hab. Van Diemen's Land.

114. C. *uncialis*, Ach.; *L. U. p.* 559.

Hab. Van Diemen's Land.

115. C. *vermicularis*, Ach.; *L. U. p.* 566.

Hab. Falkland Islands.

116. C. *rangiferina*, Ach.; *L. U. p.* 564.

Hab. Falkland Islands, Cape Horn, New Zealand and Van Diemen's Land.

117. C. *furcata*, Ach.; *L. U. p.* 560.

Hab. Falkland Islands, Cape Horn and New Zealand.

118. C. *sarmentosa*, n. sp.; thallo foliaceo palmato adscendente, podetiis cinereis subsimplicibus cæspitosis fragilissimis attenuatis, gemmis albido-sulphureis granulatis compressis, apotheciis minutis nigro-fuscis.

Hab. Lord Auckland's group.

2-3 inches high; *podetia* slightly bent; the barren acuminate, the fertile slightly thickened above. Allied to C. *gracilis*, Ach.

119. C. *rigida*, n. sp.; thallo foliaceo adscendente cinereo-glauco margine undulato subincurvo, podetiis brevibus lanceolatis medio tumidis decumbentibus subsimplicibus rigidis scaberrimis, gemmis confertissimis minutis rotundato-granulatis, apotheciis minutis nigro-fuscis.

Hab. Lord Auckland's group.

Scarcely ½ inch high; covered with coarse dark grey buds; allied to C. *cariosa*, Ach.

120. C. *ustulata*, n. sp.; thalli lobis minutis confertis lobato-crenatis cinerascentibus, podetiis brevibus lanceolatis fistulosis curvato-decumbentibus basi concoloribus apice nigrescentibus, gemmis pulverulento-granulosis.

Hab. Falkland Islands.

Podetia ¼ inch high, tumid in the middle, much acuminated and blackish above; the scales of the *thallus* resemble those of Parmelia *rubiginosa*, Ach.

121. C. *phyllophora*, n. sp.; thallo cinereo squamoso squamis subrotundis lobatis margine elevato compresso subcrenulato, gemmis granulatis, podetiis brevibus lineari-lanceolatis squamiferis fistulosis, apotheciis fuscis minutissimis.

Hab. Kerguelen's Land.

Scales large in proportion to the *podetia*, which are scarcely ¼ inch high; beset with buds expanding into thallodal scales. The perfect *apothecia* probably are not present; the existing ones resemble brown points on the summits of the *podetia*.

122. C. *capillata*, n. sp.; thalli squamis minutis, podetiis albo-cinereis subsimplicibus acuminatis apice brevissime fastigiato-ramosis gemmis compressis granulatis, apotheciis minutis rotundatis badiis.

Hab. New Zealand.

Tufts nearly 2 inches high; a few thallodal scales occur towards the bases of the *podetia*; these are erect, parallel, simple, or rarely emitting an acuminate short branch, soon bending upwards; the summits have no *scyphi*, but excessively short branches, each bearing a reddish-brown, nearly round *apothecium.* It has some resemblance to C. *gracilis,* Ach.; but there are no *scyphi* present.

17. Bæomyces, *Ach.*

123. B. *rupestris,* Persoon *ap Uster in Ann. de Bot. H. 7, p.* 19.
Hab. New Zealand.

18. Stereocaulon, *Ach.*

124. S. *paschale,* Ach.; *L. U. p.* 581.
Hab. Kerguelen's Land.
125. S. *ramulosum,* Ach.; *L. U. p.* 580.
Hab. Lord Auckland's group, New Zealand and Van Diemen's Land.
126. S. *Argus,* n. sp.; thallo albo-cinerascente erecto subcompresso fastigiato-ramoso, gemmis granulatis demum elongatis ramosis appendicibus subglobosis angulatis lacunosis, apotheciis terminalibus extus lutescentibus verrucosis disco nigro concavo demum convexo margine thallode crenulato.
Hab. Campbell's Island.

Two to three inches high; appendages as in S. *ramulosum,* Ach., from which it differs principally by the greater branching below of the *thallus,* and by the thallodal border of the apothecia.

19. Sphærophoron, *Ach.*

127. S. *compressum,* Ach.; *L. U. p.* 186.
Hab. Campbell's Island and Lord Auckland's group.
128. S. *coralloides,* Ach.; *L. U. p.* 585.
Hab. Falkland Islands and Cape Horn.
129. S. *australe,* n. sp.; thallo erecto cæspitoso, cinereo-albido demum rubescente ramis teretibus divaricatis dichotomis ultimis acuminatis, gemmis elevatis, apotheciis in ramos crassiores cylindricos elatiores subnudos terminalibus atris subglobosis margine thallode demum excluso.
Hab. Campbell's Island and Lord Auckland's group.

About 3 inches high; the *podetia* overtopping the tuft; buds broadly tipping the extreme branches.

130. S. *curtum*, n. sp.; thallo cinereo-albido erecto cæspitoso basi fuscescenti, ramis teretibus divaricatis adscendentibus, gemmis granulatis demum in ramos extendentibus.

Hab. Lord Auckland's group.

No *apothecia* were seen. Branches solid, fragile, often incrassated above, scarcely half an inch high.

131. S. *complanatum*, n. sp.; thallo erecto ramoso rufescenti-cinereo lobis linearibus explanatis integris vel fibrilloso-ramosis hic illic impresso-lacunosis, gemmis granulatis conglomeratis pallidioribus.

Hab. Cape Horn.

Scarcely exceeding half an inch. Some of the lobes spathulate, others divided into thin clustered fibres; without any polish on the surface. No *apothecia* were observed. The lobes of the *thallus* are solid.

20. Alectoria, *Ach.*

132. A. *usneoides*, Ach.; Var. *tenuis*. *L. U. p.* 594.

Hab. New Zealand.

21. Ramalina, *Ach.*

133. R. *fraxinea*, Ach.; *L. U. p.* 602.

Hab. New Zealand.

134. R. *fastigiata*, Ach.; *L. U. p.* 603.

Hab. New Zealand and Van Diemen's Land.

135. R. *terebrata*, n. sp.; thallo plano ex basi discoidea laciniato erectiusculo cinereo laciniis linearibus acuminatis apice inflexis demum perforatis, sorediis minutis confertis pulverem crassum albidum effundentibus, apotheciis sparsis demum planis concoloribus margine integerrimo.

Hab. Falkland Islands and Cape Horn.

Very variable in size, colour and breadth of the lobes; from 1 inch to 1½ feet high, from one-tenth to nearly 1 inch broad, from a tawney brown to nearly white; segments sometimes entire, more commonly pierced all over; ultimate divisions either few or very many.

136. R. *verrucosa*, n. sp.; thallo lutescenti plano ex basi lineari laciniato utrinque glabro longitudinaliter rugoso laciniis acuminatis, gemmis granulatis, apotheciis marginalibus demum planis concoloribus margine extus verruco-so-rugosis.

HAB. Falkland Islands.

3-4 inches long, canaliculate, branched from the base, buds on the *thallus* flattened, but appearing on the backs of the *apothecia* as wart-like wrinkles. *Thallus* sometimes reticulato-perforate above.

137. R. *geniculata*, n. sp.; thallo laxe cæspitoso albido-cinereo glabro dichotomo ramosissimo, ramis intricatis lobis linearibus hinc concaviusculis acuminatis, gemmis dispersis granulatis statim linearibus, apotheciis planis concoloribus margine tenui integerrimo subtus thalli laciniam emittentibus.

HAB. New Zealand.

About 2 inches high. Branches sometimes pierced with a series of minute holes. The *apothecia* are merely marginal, or more commonly a new branch of the *thallus* is sent off from beneath each, as in Usnea *Jamaicensis*, Ach., so that the *apothecium* appears situated at the bending or knee of the *thallus*.

141. R. *ovalis*, n. sp.; thallo plano laxe cæspitoso viridi-cinereo utrinque glabro erecto laciniis ex angusta basi ellipticis longitudinaliter rugosis margine integerrimis, gemmis terminalibus planis statim anguste ellipticis, apotheciis centralibus confertis disco carneo-cinereo convexo demum corrugato margine tenui integerrimo.

HAB. Van Diemen's Land, on trees.

This has the outline of Fucus *ovalis;* yet the buds cause the ends of the lobes to appear laciniated; similar buds sometimes issue from the backs of the *apothecia*. *Thallus* 1-2 inches high, strongly veined and split between the veins towards the base. The constant breadth of the full grown *thallus*, the terminal flat buds and the central *apothecia* distinguish the present species from R. *fraxinea*, Ach.

22. COLLEMA, *Ach.*

139. C. *nigrum*, Ach.; *L. U. p.* 628.

HAB. New Zealand.

140. C. *tremelloides*, Ach.; *L. U. p.* 655.

HAB. Cape Horn and New Zealand.

141. C. *australe*, n. sp.; thallo foliaceo-membranaceo tenui atro-olivaceo subpellucido nudo lobis adscendentibus subimbricatis concaviusculis rotundatis undulatis integerrimis subtus pallidioribus subtomentosis, apotheciis elevatis atris demum convexis subtus nudis margine tenui integro.

HAB. Cape Horn.

Thallus very thin, slightly gelatinous, shining when wet and of a dark brownish-olive, pale and of a dusky olive green when dry. Like those of C. *Saturninum*, Ach., the *apothecia* are hollow beneath and there destitute of a layer of *thallus*. It differs from that species by being less downy beneath, by the want of black powdery buds on the surface, by the thinner *thallus* and black disks of the *apothecia*.

142. C. *læve*, n. sp.; thallo foliaceo membranaceo submonophyllo orbiculato depresso lævi rotundato-lobato lobis concavis cochleatis integerrimis, gemmis centralibus granulatis, apotheciis centralibus confertis minutis concavis rufofuscis margine tumido integro subincurvo.

HAB. New Zealand, on trees.

Allied to C. *nigrescens*, Ach., but the lobes are thinner, smoother, without longitudinal wrinkles, and the *apothecia* in all stages are concave, with a thicker thallodal cup.

143. C. *rugatum*, n. sp.; thallo gelatinoso-membranaceo elastico subtenaci utrinque cristis confertis longitudinalibus undulatis plicato fusco-viridi lobis confertis adscendentibus oblongo-rotundatis incisis crenatis concaviusculis, gemmis minutis granulatis stipitatis.

HAB. New Zealand. On hasels, Mucruss, county of Kerry, Ireland always on trees.

Exceeding 3 inches in diameter, when wet soft and pellucid; the longitudinal plaits are of different sizes, waved, opaque, usually rough with buds which on the Irish specimens are seen expanding into new *thalli.* No *apothecia* observed in either locality.

144. C. *leucocarpum,* n. sp.; thallo foliaceo membranaceo lævi olivaceo rotundato-rugoso lobis rotundatis integerrimis margine flexuosis, apotheciis centralibus confertis albo-incarnatis disco convexo pruinoso margine integerrimo.

HAB. Van Diemen's Land.

1-2 inches wide, *thallus* very thin, subpellucid when wet. Dissection shews a white pruinose disk, the *lamina* transparent and colourless, resting on a layer of flesh-coloured matter. The more aged *apothecia* are so convex as to conceal the border. Related in characters to C. *Rottleri,* Ach., which however is said to have the margins of the lobes incised and crenate and the *apothecia* of a wax colour.

23. USNEA, *Ach.*

145. U. *florida,* Ach.; *L. U. p.* 620.

HAB. New Zealand and Van Diemen's Land.

146. U. *plicata,* Ach.; *L. U. p.* 622.

HAB. Falkland Islands and Cape Horn.

147. U. *barbata,* Ach.; *L. U. p.* 624.

HAB. Lord Auckland's group, Campbell's Island, Falkland Islands, Cape Horn, and Van Diemen's Land.

148. U. *melaxantha,* Ach.; *L. U. p.* 618.

HAB. Falkland Islands and Hermite Island.

149. U. *Taylori,* Hook. fil. mst. thallo erecto lævi pallide citrino dichotomo, ramis erectis gemmis papulosis sparsis, apotheciis terminalibus majoribus demum planiusculis disco atro-purpureo margine integerrimo extus lævigatis.

HAB. Kerguelen's Land.

4 inches high, rising from a thick, dark, coriaceous disk; branches cylindrical, acuminated, slightly curved where they

separate, erect above. *Apothecia* often conjugate with a terminal branch. There is no space between the surrounding cortical part and the hard and horny *axis*, so as to exhibit the longitudinal internal thread peculiar to this genus. This space is not so entirely obliterated in U. *melaxantha*, Ach., which has the greatest affinity with the present fine species, but which is easily recognised by its scabrous branches and granulate backs of the *apothecia*. The blackening of the tips of the *thallus* is perhaps owing to the attack of a minute *Sphæria* of that colour. This Lichen is the handsomest of the vegetable productions of this the Island of Desolation.

150. U. *angulata*, n. sp.; thallo cinereo pendulo elongato filiformi angulato pinnato cortice minute transversaliter rupto fibrillis brevibus teretibus horizontalibus confertis, gemmis minutis granulatis demum compressis.

HAB. New Zealand.

More than a foot long. The principal stem has the bark broken across into minute pieces, each with a projecting ridge in the same line to the next, and so the entire appears angulate. This differs from *U. florida*, Ach., by its pendulous, filiform, elongated and pinnated *thallus*, by the angulated principal stem, and the minute buds. No *apothecia* were found.

23. LEPRARIA, *Ach.*

151. L. *flava*, Ach.; *L. U. p.* 663.

HAB. Falkland Islands.

PLANTÆ CELLULARES *quas in insulis Philippinensibus a cl.* CUMING *collectæ recensuit, observationibus non nullis descriptionibusque illustravit*[*] C. MONTAGNE, D.M.

ALGÆ, *Auctor.*

1. Conferva *pellucida?* Huds. vel ei species affinis. Ramis

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[*] The set of Philippine Island Cryptogamiæ, here described by Dr. Mon-

ramulisque crassioribus vix differt a typo. Ramificatio prorsus eadem. Chartæ non adhæret. Cuming, Coll. n. 2218.

2. Caulerpa *taxifolia,* Ag. n. 2219. Coll. Berkeley.
3. C. *plumaris,* Ag. Fucus taxifolius, Turn. t. 54. n. 2219. Coll. Webb et Delessert.
4. Udotea *sordida,* Montag. ms. stipite vix ullo bulboso mox in frondem cuneato-flabelliformem fusco-olivaceam sordidam obsolete zonatam dilatato. n. 2233. Coll. Delessert.

Alga membranacea, cum bulbo stipitiformi uncialis, basi cuneata, semiorbicularis, zonis obscurioribus trans lucem præsertim manifestis notata. Structura: fila dichotoma, alia materie viridi, alia materie fusco-succineo farcta, inter sese maxime intricata. Fructus.....

Ab U. *Desfontainii,* Dne. colore, structura, nec non defectu stipitis videtur diversa. Descriptio ex uno specimine facta.

5. Halimeda *macroloba,* Dne. Ann. Sc. nat. Bot. 2nd ser. tom. 18. p. 103. n. 2233. Coll. Berkeley.
6. Ulva *reticulata,* Forsk. Ag. Sp. Alg. 1. p. 412. Coll. n. 2246.
7. Codium *tomentosum,* Ag. l. c. p. 452. E. B. t. 712. Coll. n. 2245.
8. Liagora *Cenomyce,* Dne. l. c. p. 119. Coll. n. 2237. In coll. Mus. Paris. adest sub n. 2222.
9. Actinotrichia *rigida,* Dne. l. c. p. 118. Coll. n. 2222. Berkeley, Delessert et Webb.
10. Galaxaura *fastigiata,* Dne. l. c. p. 116. Coll. n. 2241.

tagne, was very kindly sent by Dr. Lindley to Mr. Berkeley, who shared them with his friend Dr. Montagne, with the request, to which he readily acceded, that he would forward a list of them to Sir W. J. Hooker, for his Botanical Journal. Dr. Montagne had the opportunity of inspecting three sets in the Paris Herbaria, but did not always find the same numbers attached to the same plant in these collections. Unfortunately many of the specimens being without fruit, it was not practicable to refer such species with perfect certainty to their proper place, and several of the numbers he has found it absolutely impossible to determine.

11. Mesoglœa *microcarpa,* Montag. ms. fronde gelatinosa lubrica a basi ramosissima, ramis virgato-dichotomis sensim attenuatis, ramulis lateralibus subulatis obsessis, sporis pyriformibus omnuim minimis prope apicem filorum positis. Cuming, *Exsicc.* n. 2221.

Alga maxime lubrica. Fixura deest. Frons palmaris, longior, basi in statu sicco sesquilineam lata, subdivisionibus paululum dilatata. Rami iterum dichotomo-ramulosi. Ramuli sensim attenuati, hinc inde ramulatis subulatis, spinescentibus acutissimis obsessi. Color olivaceus. Structura delicatissima, non nisi maximis augmentis microscopii compositi, (ex. gr. 800) facile discernenda. Fila peripherica vix 4 centimillimetra metientia, dichotoma, endochromatibus sphæricis 1-500 millimetri diametro æquantibus, apicem versus sporas pyriformes centimillimetro longitudine minores ferentia.

Ab omnibus congeneribus, quarum quidem majores statura refert et adæquat, minutie partium sive ad vegetationem, sive ad fructificationem spectantium omnino recedit, nec cum ulla alia confundi potest. Specie idcirco eximia et singularis.

12. Dictyota *linearis,* Grev. Syn. p. 43. Coll. n. 2245.

13. Sargassum *cristæfolium,* Ag. Sp. Alg. 1. p. 13. Coll. n. 2231.

14. S. *Esperi,* Ag. l. c. p. 9. Coll. n. 2243.

15. S. *bacciferum,* Ag. l. c. p. 6. Coll. n. 2251.

16. S. *filiforme,* Montag. ms. caule filiformi lævi ramoso, ramis spiraliter alternis, foliis linearibus angustissimis nervosis vix dentatis, vesiculis minutis subsphœricis muticis glandulosis, receptaculis filiformibus racemosis longissimis lævibus torulosis. Exsicc. n. 2229.

Caulis pars superior, quæ sola remanet, quadriuncialis, teres, lævigata; filiformis, nervum citharæ secundum post minorem crassitudine vix superans, laxe ramosa. Rami tenuiores spiraliter alterni, intervallo inæquali bisexlineari sejuncti, patenti-erecti, foliis vesiculis et receptaculis laxe onusti. Folia angustissime linearia, fere filiformia, plana, semunciam longa, nervo percursa, poris sparsis rarisque signata, alia dente uno alterove, raro pluribus instructa, alia integerrima basi teretia, acutissima. Vesiculæ cum receptaculis basi foliorum, qua parte in petiolum attenuatur, impositæ, elliptico-sphæricæ, semilineam diametro metientes, muticæ poris glandulosis signatæ, petiolo tereti ipsis breviore suffultæ. Receptacula filiformia, tenuissima, 2-3 lineas longa, lævia, torulosa, prope vesiculas in petiolo folii solitaria, binata ternataque. Substantia coriacea. Color fuscus, exsiccatione nigrescens.

Species *Sargasso angustifolio* valde affinis, quæ tamen ab illo pluribus notis differre videtur. Et quidem celeb. Turnerus suæ algæ folia serrato-dentata, siccitate crispabilia vesiculas mucronatas, læves, receptacula elliptica tribuit quæ omnia in nostra, ut jam e descriptione satius elucebit diversissima sunt. Forsan et *Sargasso Baccularia*, Ag., dubiis ad huc vexato maximis, mihique prorsus ignoto, Alga Cumingiana propinqua est. Attamen, cum folia hujus integerrima subenerviaque dicuntur, non possum alteram ab alterâ diversam non censere.

17. S. *polycystum*, Ag. Syst. p. 304. Coll. n. 2244. Webb, Deless.—non adest in Coll. Berk.

18. S. *hemiphyllum ??* Ag. Sp. Alg. 1, p. 39. Turn. t. 167? —Coll. n. 2229.

S. caule filiformi triquetro ramoso, ramis simplicibus ramulosis cuneiformibus enerviis porosis apice dentatis, vesiculis minoribus petiolatis glandulosis oblongis, receptaculis racemosis linearibus dichotomis torulosis foliis vesiculisque immixtis eorumque petiolo suffultis.

Si determinatio recta est, quod valde dubium, facies algæ fructiferæ a sterili multum recedit. Cæterum specimen visum valde incompletum partem frondis superiorem tantum sistit. Forma foliorum iconi Turnerianæ exactè respondet. An species nova?

19. Turbinaria *denudata*, Bory, Coquille, p. 117. Turn. t. 24. fig. *a—e.*—Coll. Deless. n. 2242.—Cum *Jania pumila*, Lamx. parasitante.

20. Gelidium *spiniforme*, Lamx. Essai, p. 41.—Coll. n. 2226.

21. Gigartina *gelatinosa*, Endl. Suppl. 3, p. 42. *Fucus gelatinus*, Esp. Fuc. t. 101, f. 5—7. Coll. n. 2237.

22. Laurencia *obtusa*, Lamx. Essai, p. 42. Turn. t. 21. Coll. n. 2249.

23. L. *papillosa*, Grev. Syn. p. 53. Turn. t. 19. Coll. n. 2247.

24. Asparagopsis *Delilei*, Montag. Hist. Nat. Canar. Phytog. sect. ult. p. xv, t. 8, fig. 6.—Coll. n. 2236.

25. Acanthophora *Thierii*, Lamx. Essai, p. 44. Esp. Fuc. t. 159. Coll. n. 2224.

26. Amphiroa (Eurytion) *Cumingii*, Montag. ms.; repetite dichotoma, articulis omnibus ancipitibus oblongo-cuneatis utroque fine truncatis, mediis longioribus (tres lineas metientibus) supremis obtusis inferioribusque brevioribus; conceptaculis minutis convexis pustuliformibus in mediis articulis sitis. Alga fragilissima, pallida, biuncialis, repetito-dichotoma fructibus papulosa.—Coll. Deless. Webb. n. 2232.

27. Mastophora *licheniformis*, Dne. l. c. p. 126. Coll. Deless. n. 2231. Berk. n. 2238.

28. Hypnea *Valentiæ*, Montag. Crypt. Canar. p. 161. Turn. t. 78.—Coll. n. 2227.

29. Gracilaria *confervoides*, Grev. Syn. p. 54. Coll. n. 2230.

30. Dichonema *sericeum*, Montag. in Belang. Voy. Ind. Or. Crypt. p. 155. Est planta fungosa secundum observationes Rev. M. J. Berkeley.—Coll. n. 2187.

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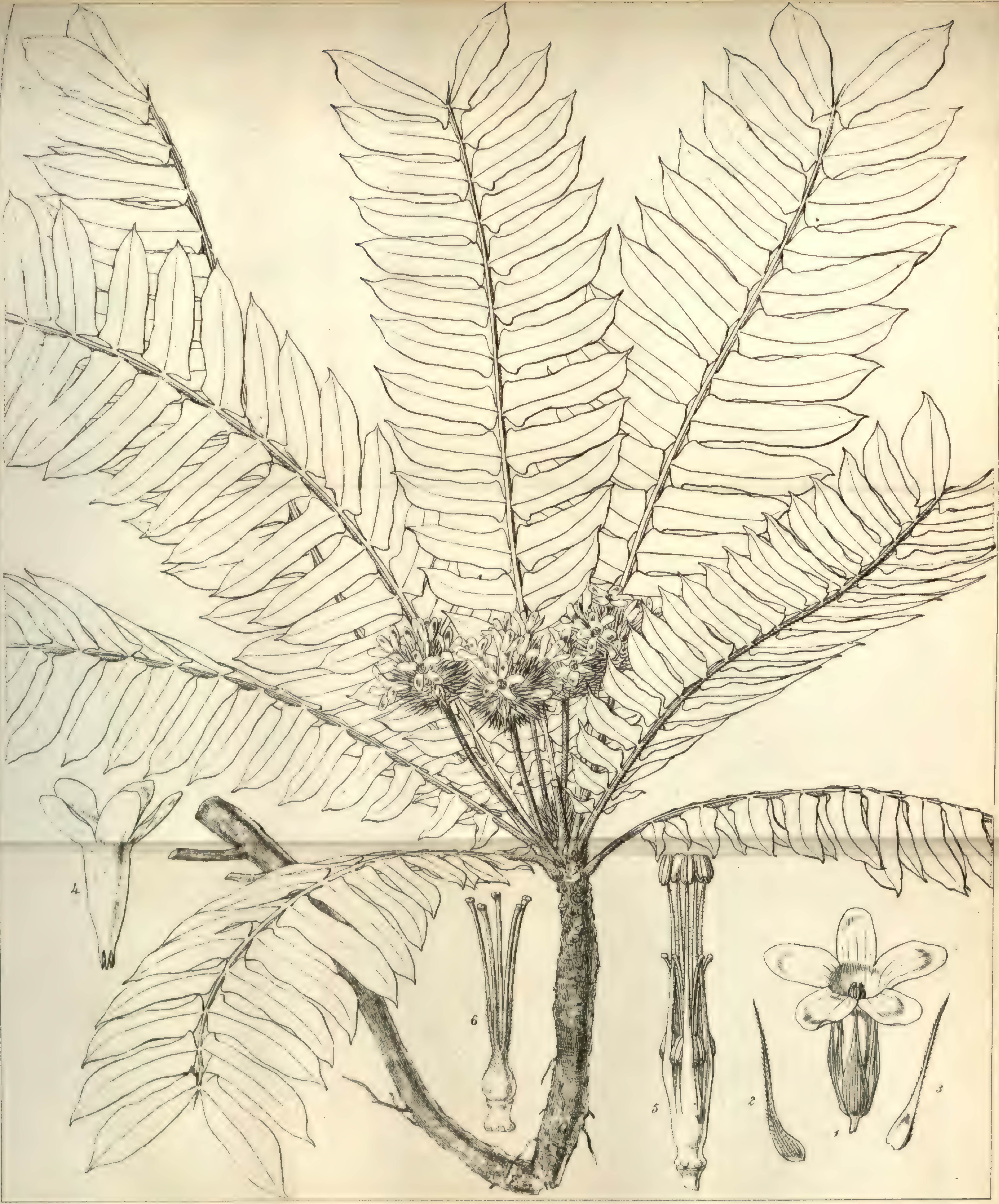

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Oxalis lindsææfolia.

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Hyobanche coccinea.

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Thuja tetragona.

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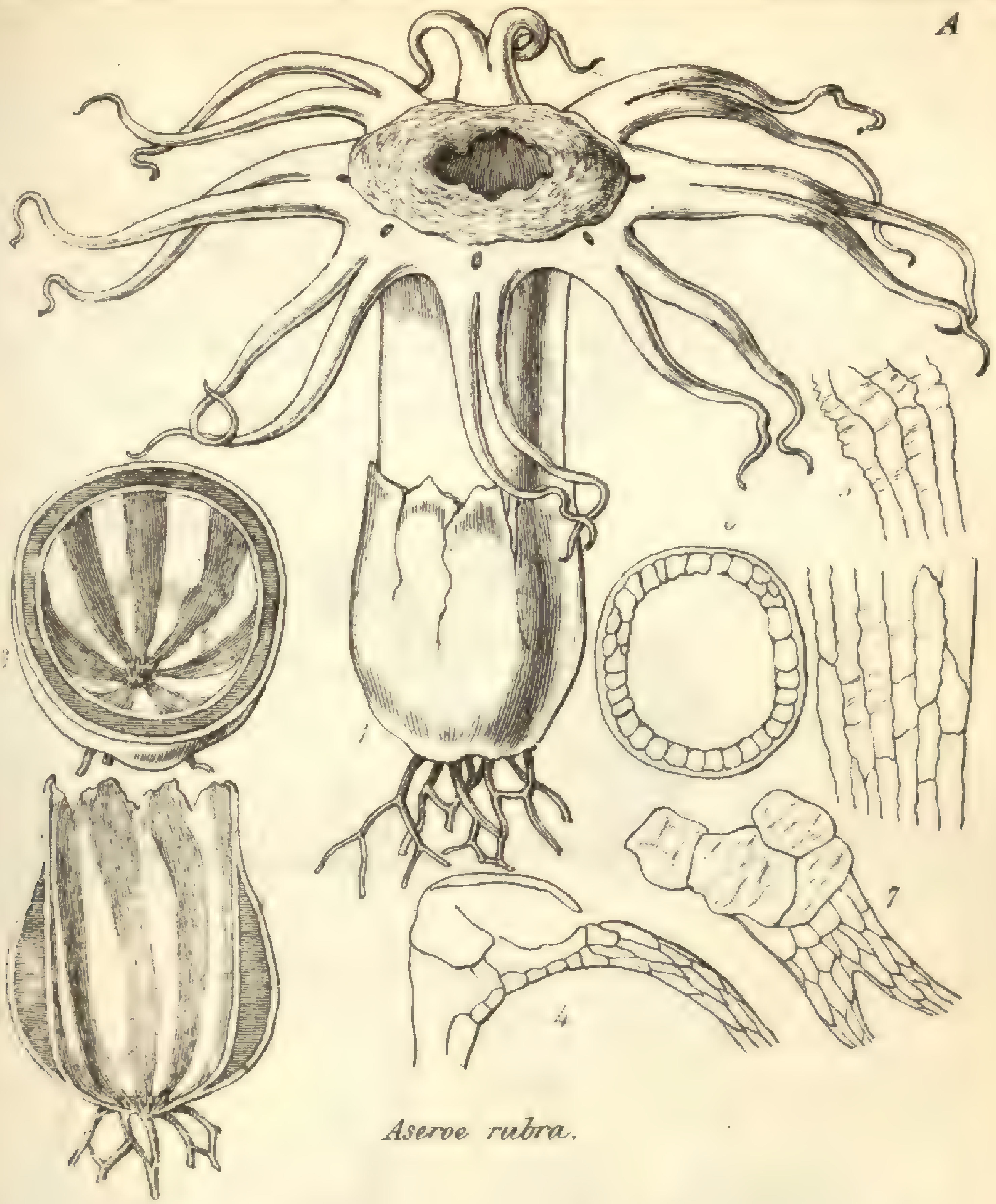

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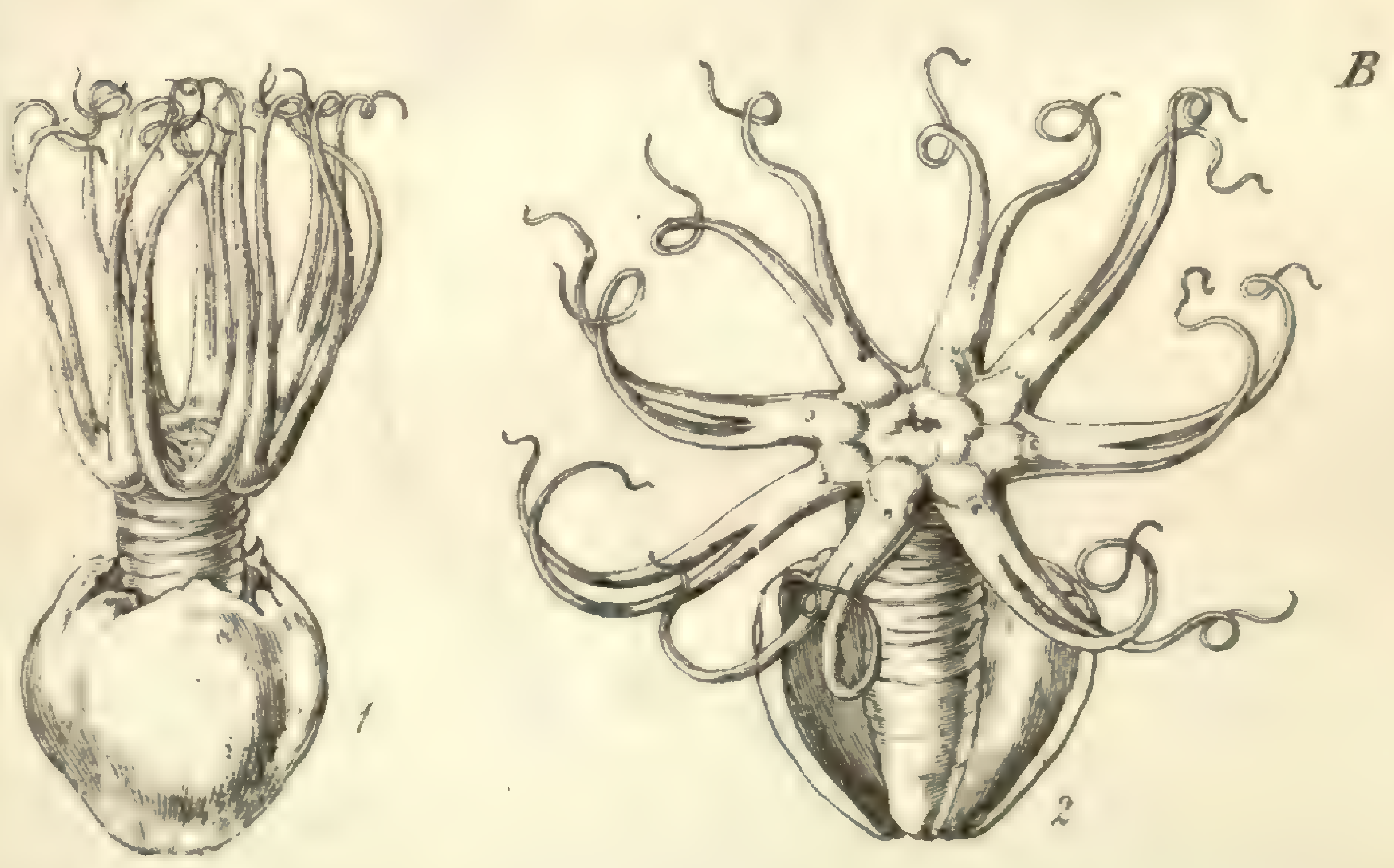

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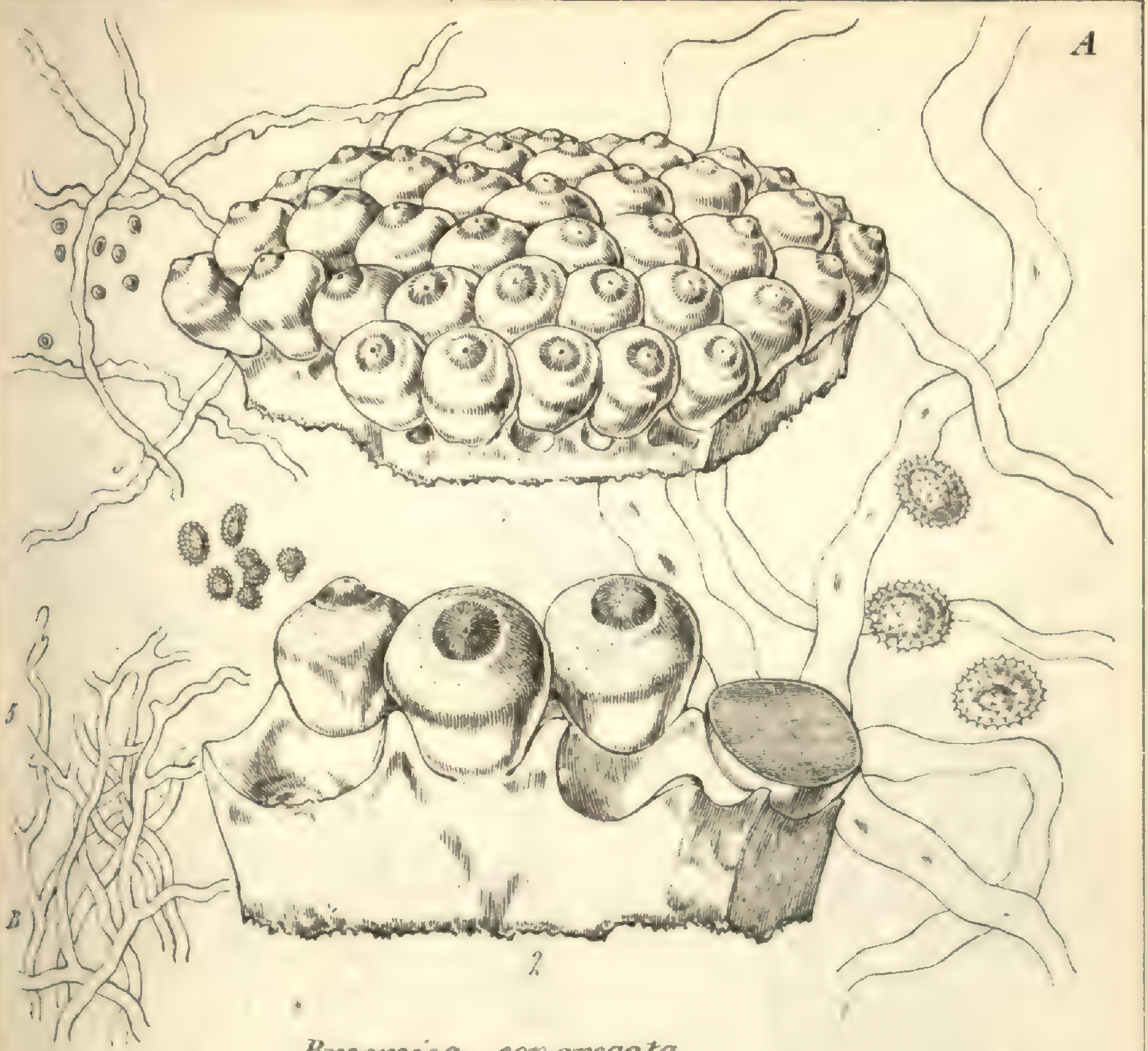
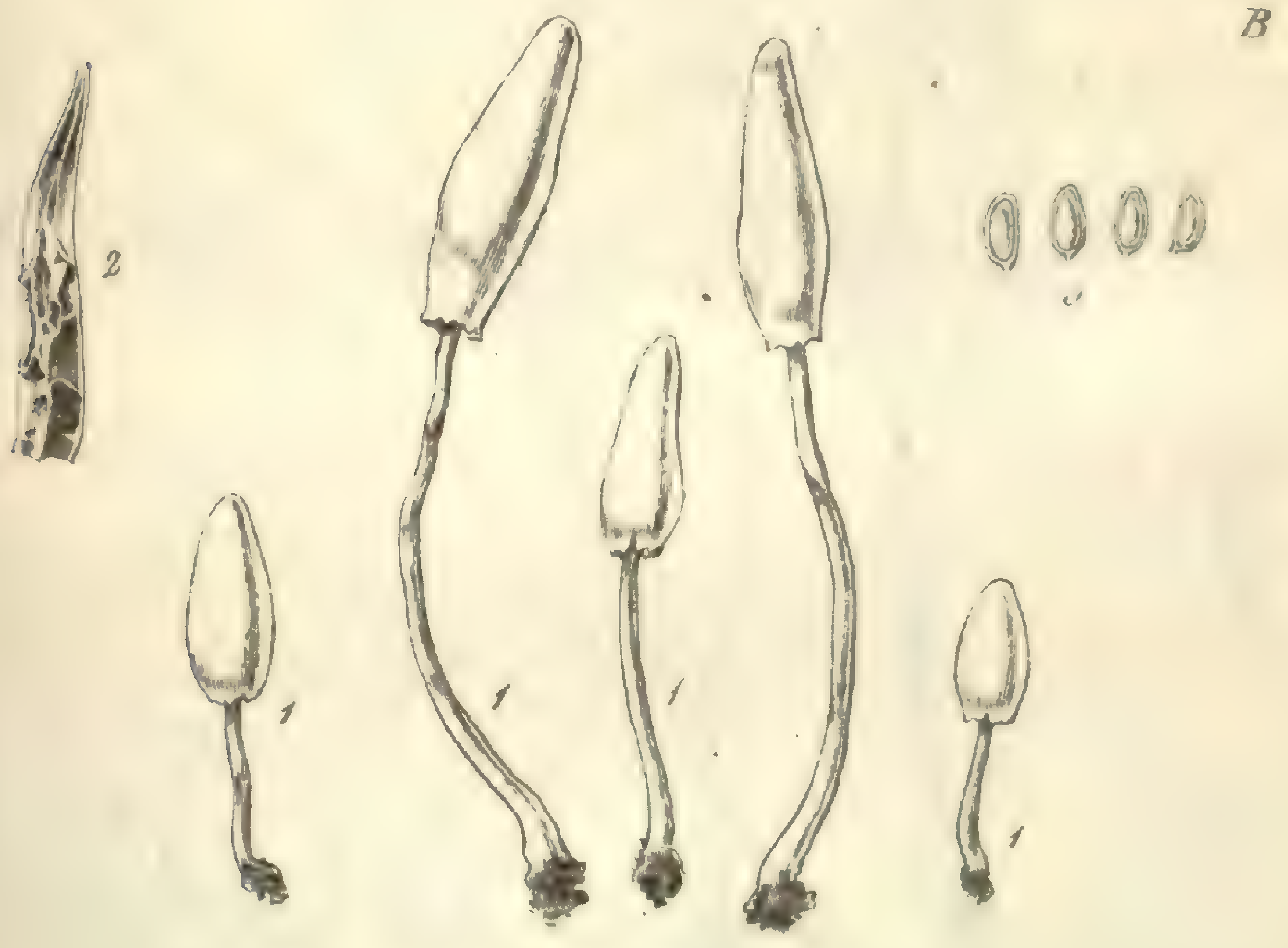


Broomiea congregata.



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Bolbitius mitriformis.

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Exothea oblongifolia.

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Elæodendron micranthum.

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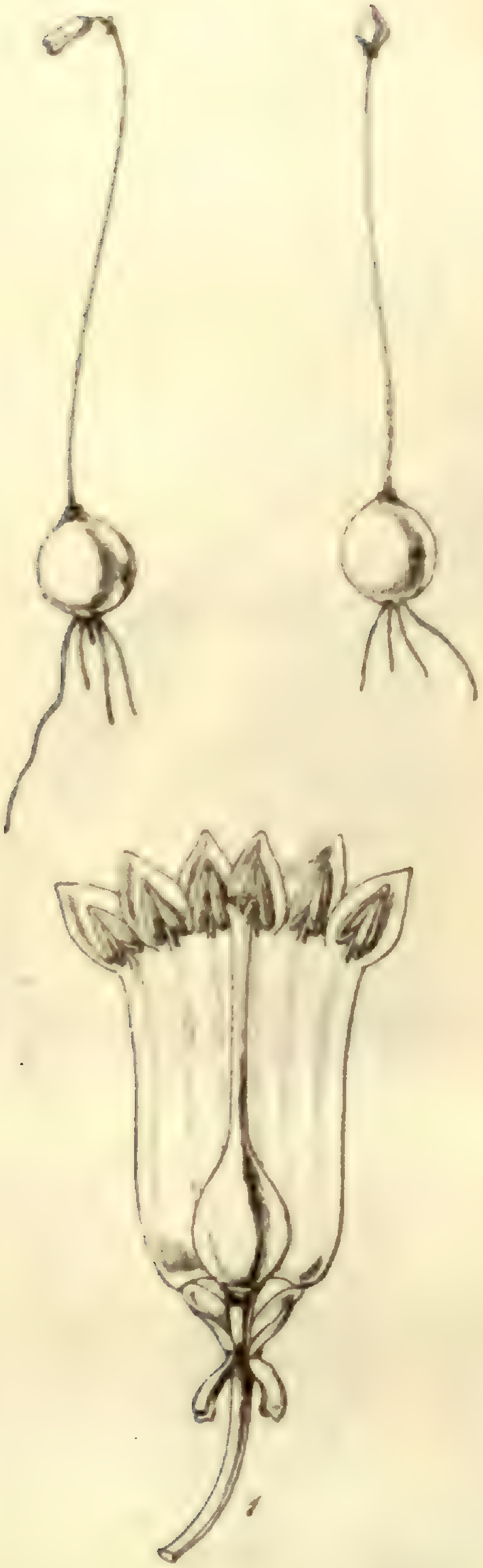

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Litanthus pusillus.

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Notylia multiflora.

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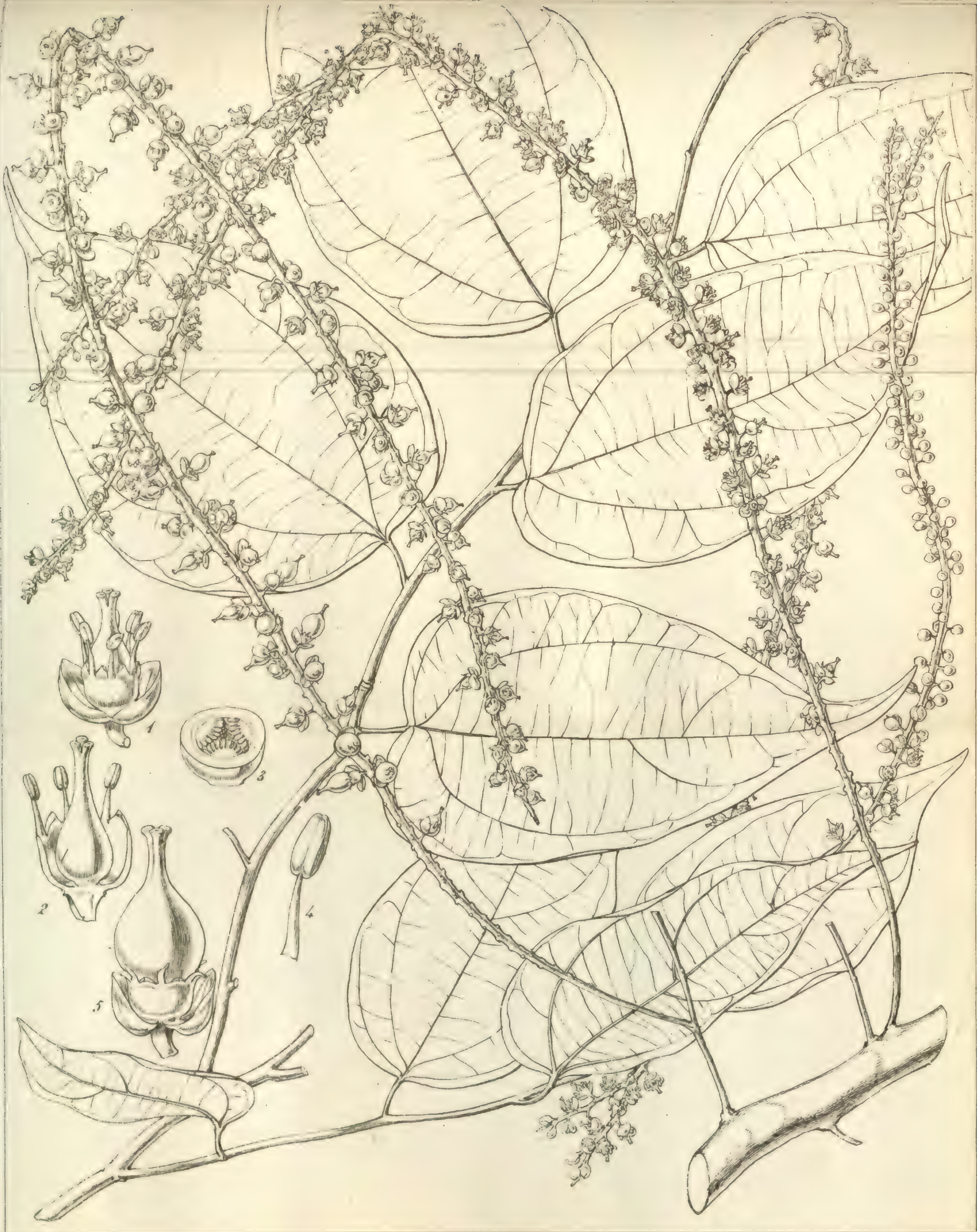

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Lunania racemosa

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Cuticle of Plants.

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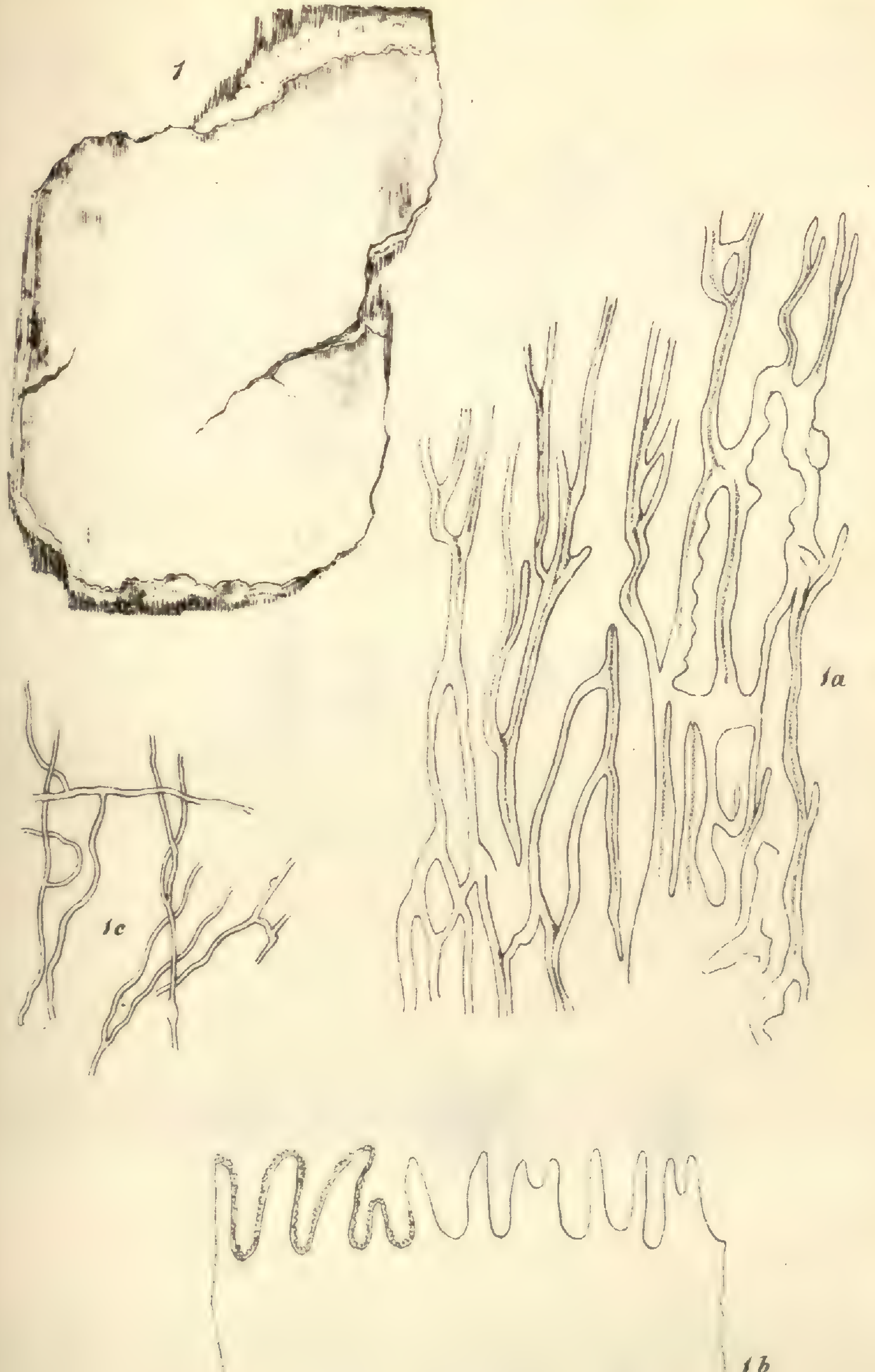

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Hymenogramme Javensis

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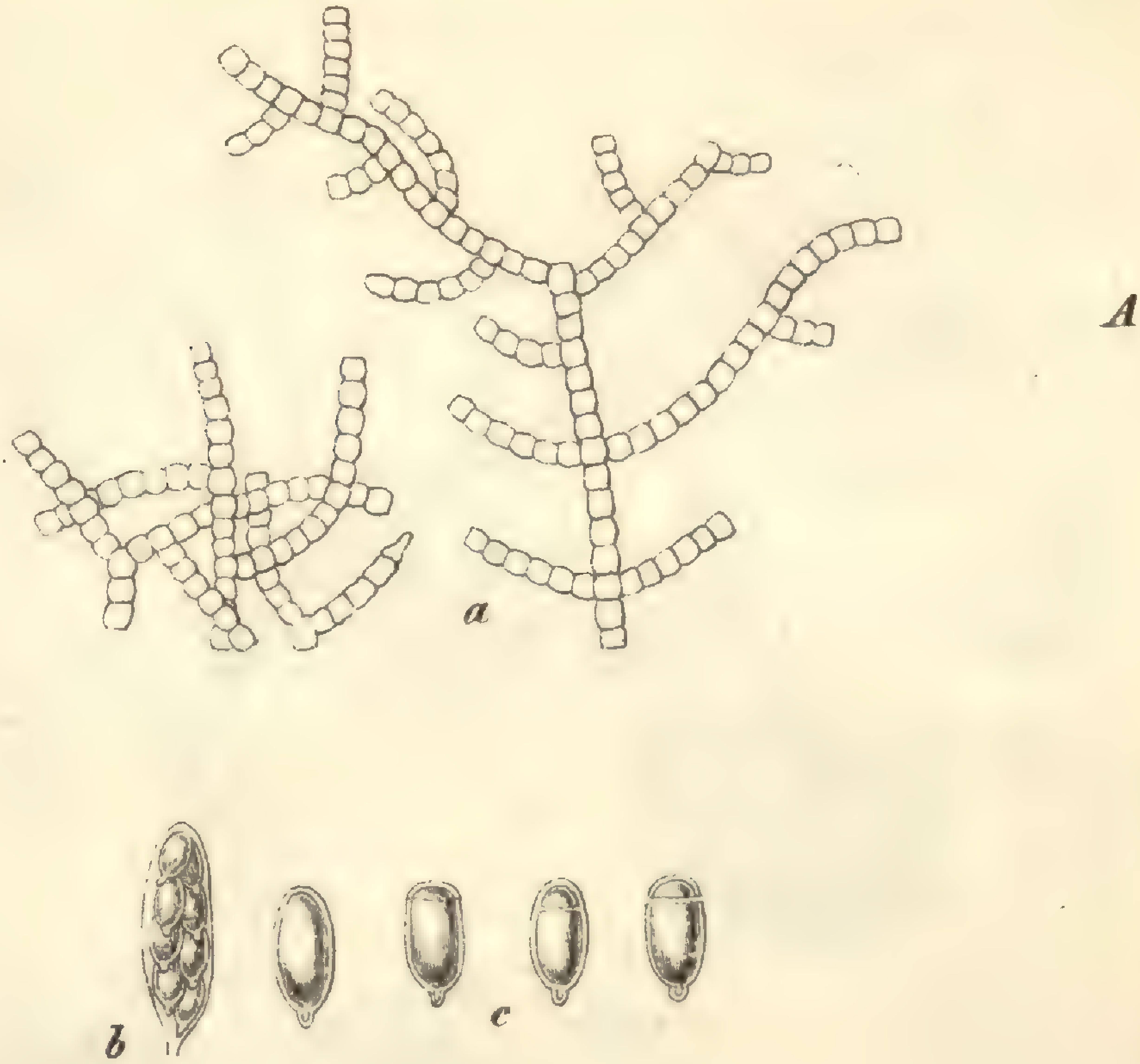
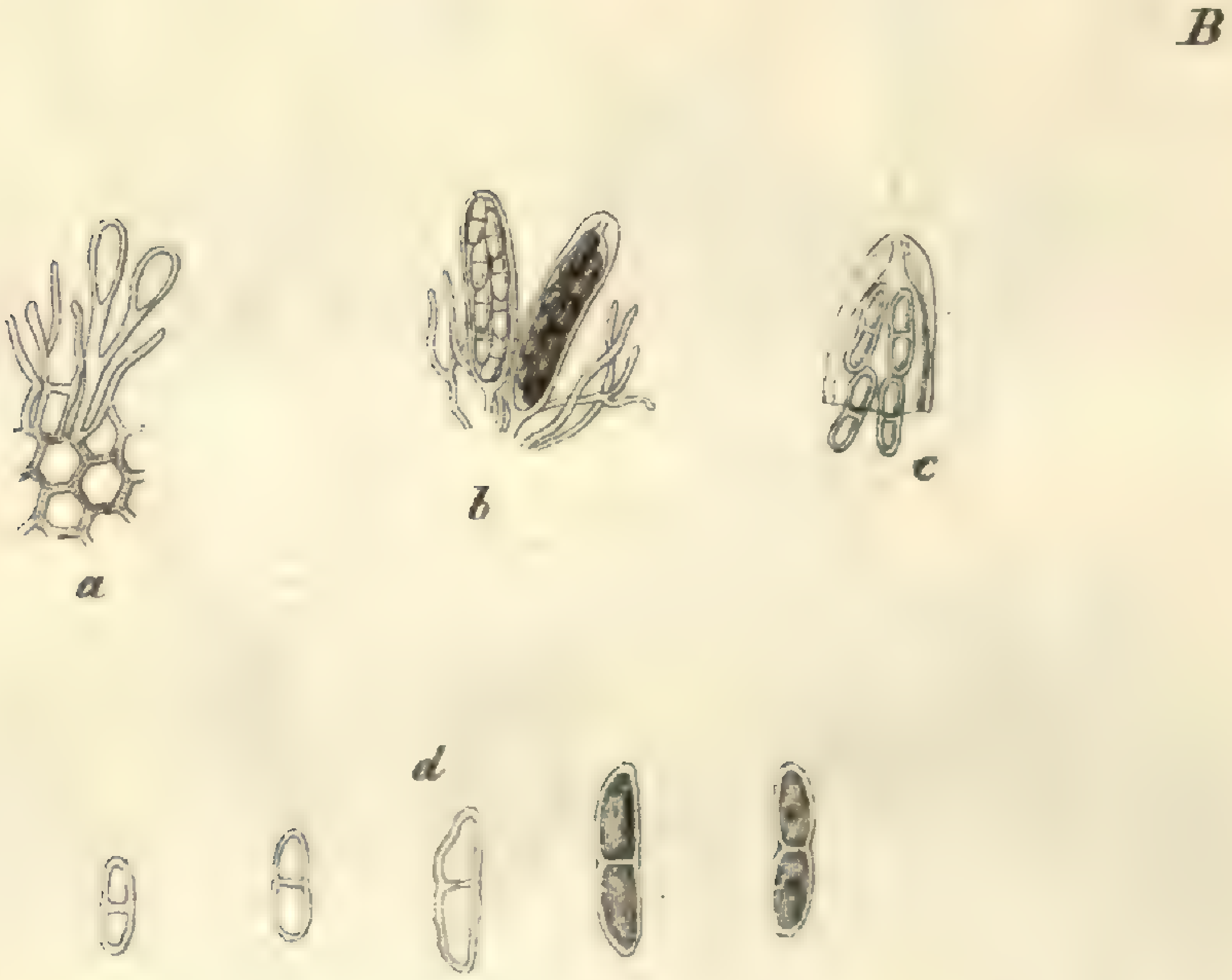


Dothidea appendiculosa



Dothidea Zollingeri

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Maddox lithr. Wellington street, Strand

Simmondsia Californica

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E. Edgeworth del.

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Ouvirandra undulata

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Champia Tasmanica.

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Claudea elegans.

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Helianthemum Breweri. Planch.

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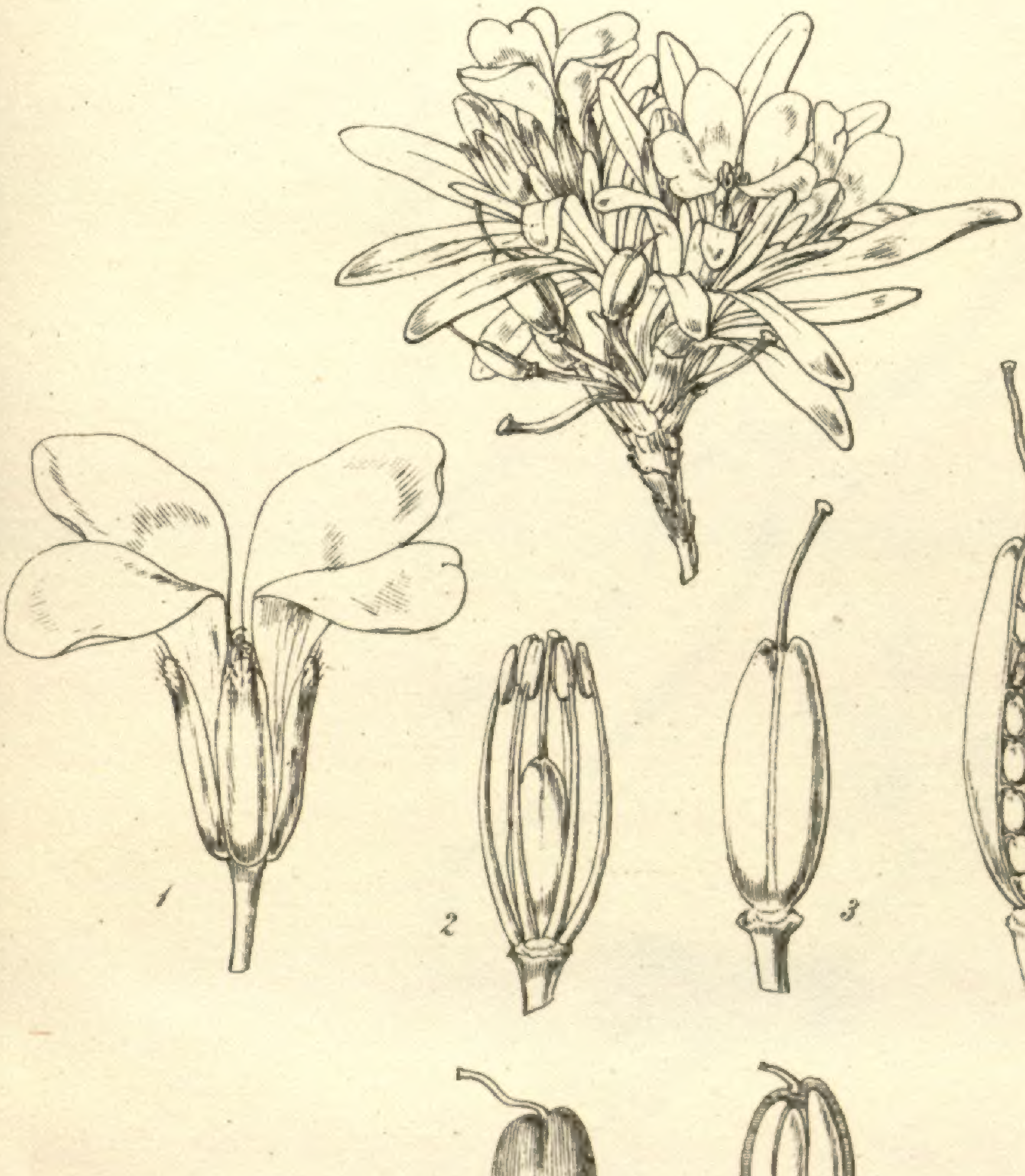

Eudema grandiflora. Planch.

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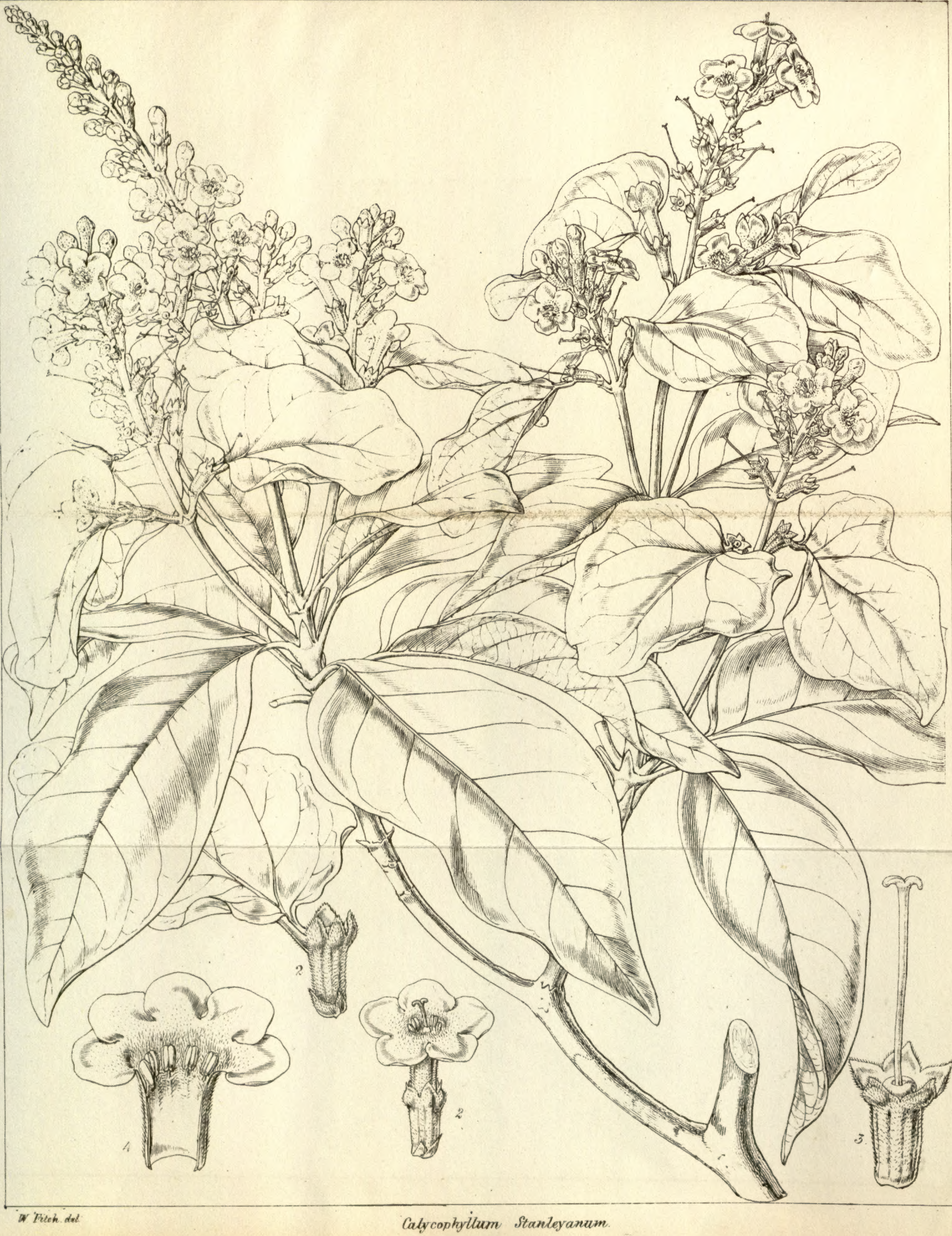

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Calycophyllum Stanleyanum.

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